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ESC FOCUSES ON DEVICE DESIGN

Field maintenance other key theme

BY EDWARD J. CORREIA

SAN FRANCISCO —

Perhaps it was the larger

expanse of the Moscone

Center here that was responsi-

ble for what appeared to be the

smaller crowds that many

exhibitors were complaining

about. However, according

to show organizer CMP Media

Inc., attendance of about 15,000

this year was on par

with last September's

show in San Jose, Calif.

Exhibiting a taste

for thin clients akin to the Win-

dows-based terminal, embed-

ded Linux developer Tuxia

Inc. (www.tuxia.com) was de-

monstrating the Tuxia Appli-

cance Synthesis Technology, or

TASTE, a point-and-click envi-

ronment for creating Linux-

Embedded Systems
Conference San Francisco

FOR ESC
HARDWARE
SEE
PAGE 29

based thin clients capable not
only of accessing the Web, but
also of executing applications
on servers running Microsoft
Windows 2000, Terminal Ser-

ver and Citrix MetaFrame.

TASTE presents a treelike

interface for develop-

ers to drag and drop

Linux components that

make up the boot

image that can be stored onto

device flash. Among those com-

ponents are Linux versions of

the Citrix ICA client and Micro-

soft's RDP client. Based on the

Linux 2.4 kernel, the kit also

includes a Mozilla browser and

continued on page 30

IBM Acquires Informix In \$1 Billion Deal

BY DAVID RUBINSTEIN

In a move that it claims immedi-
ately doubles its presence in the
Unix and Windows arenas, IBM
Corp. announced it has acquired
Informix Software in a cash
transaction valued at \$1 billion.

While Jeff Jones, IBM's
senior program manager for
IBM data management solu-
tions, emphasized the acquisi-
tion was made "to offer our
customers the widest array of
choice" in database solutions,
he acknowledged that IBM
wanted to cut into the huge
lead enjoyed by rival Oracle
Corp. in the Unix market. The
acquisition, Jones said, makes
it "a two-horse race" in what he
described as the distributed
database market. On the main-
frame, he said, IBM has about
96 percent of the market.

Jones added that IBM
stands to benefit on all plat-
forms "with what we learn
from Informix." Of particular
interest, he said, is Informix's
Cloudscape mobile and em-

bedded database solution, and
the Cloudsync application
server that synchronizes distri-
bution of applications among
mobile users. Cloudscape's
proprietary LUCID technolo-
gy—Logic Up, Consistent
Information Down—is the key
to moving code changes out to
distributed applications and
receiving business events for
updating throughout an enter-
prise's applications and data-
bases, according to Jones. "We
want to see what synergies are
there and look inside to see
how we can improve DB2
Everyplace."

Along with the technology,
IBM acquires an installed base
of 100,000 Informix customers
and 2,500 employees. Jones
said Informix customers will
not be forced to migrate to
DB2, at least not now. "In-
formix is not stopping activity
on their products," Jones said.
"We're keeping their software
system alive as long as cus-
tomers say they want it." ■

SD Expo Unaffected by Tech Slowdown

BY DOUGLAS FINLAY

AND ALAN ZEICHICK

SAN JOSE, CALIF.

— Downturn? What

downturn? Even

though tech stocks were plum-

meting and dot-com employees

were as likely to be brandishing

their résumés as boasting about

their stock options, the 14th

annual Software Development

Conference and Expo, spon-

sored by CMP Media Inc. last

month, appeared to defy the

slowdown with new launches

and technical sessions aimed at

the developer's need for both

efficacy and efficiency.

"In a down economy, and

especially here within the Sili-



con Valley region, we
attracted 1,083 confer-
ence attendees, 3,154
expo-only attendees
and 947 exhibitor

attendees, roughly the same

attendance numbers as last

year," said Mike Gottlieb,

CMP's show director for this

event. Gottlieb also touted the

show's new Web Services World

breakout conference track,

which offered two

dozen classes on XML,

SOAP, WSDL, UDDI

and DSML (Directory

Services Markup Language).

"Software developers are clearly

the early adopters of the rapidly

emerging Web services world,"

he said, claiming that vendors

were on hand to launch many

new products, such as an XML

publishing system and project

management tools, as well as

upgrades to existing products.

Four J's America Inc.

announced its XML Publishing

System, a report-generation sys-

tem that can extract information

from Four J's Business Develop-

ment Platform and output them

to the Web, to physical printers,

to electronic documents or as an

XML data stream. "The report-

writing capabilities in our cur-

rent Business Development

Platform required vendor-spe-

cific solutions that were just not

very good for our needs," said

Doug Lanther, vice president

of business develop-

ment at Four J's Ameri-

ca (www.4jsamerica

.com). With XML Pub-

lishing, "users can define how

they wish to view the reports

being generated, through the

use of XSL style sheets," he

continued. He said the XSL

style sheets provide views of

reports from various file for-

formats within end-user applica-

tions such as Adobe's Acrobat

or Microsoft's Excel and Word.

"The benefit for developers

is that they no longer have to

continued on page 18

MICROSOFT SENDS NEXT CE TO BETA

BY EDWARD J. CORREIA

SAN FRANCISCO — Micro-

soft Corp. has released the next

version of Windows CE—code-

named Talisker—to 300 user

sites for its first round of beta

testing. According to the com-

pany, new features will include

DVD support, Keberos and SSL

security protocols and native

support for Bluetooth wire-

less networking.

The company also reported

that the upgraded operating sys-

tem will add support for inter-

rupt service routines, which in

effect map physical interrupts

into logical ones and can facili-

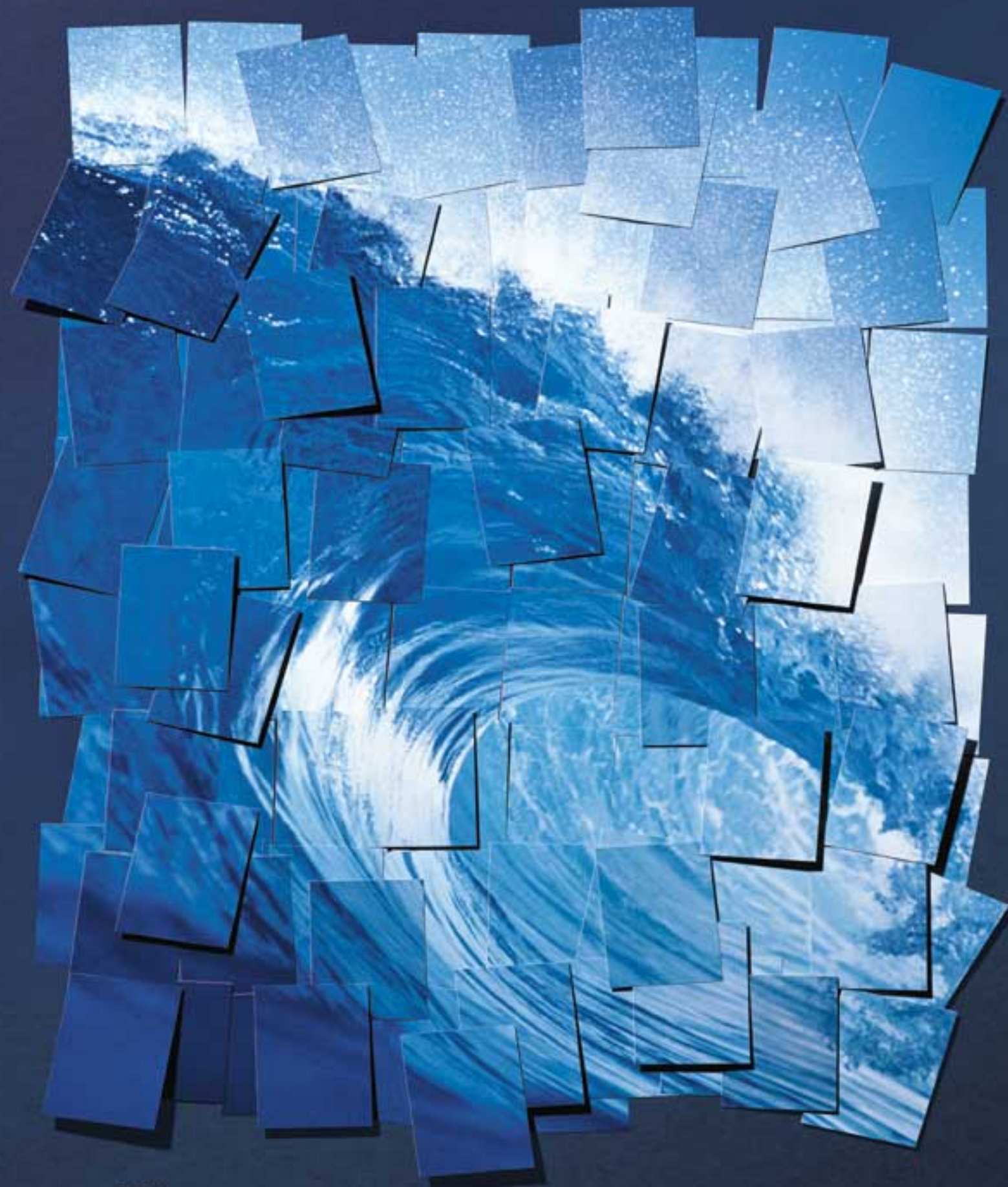
tate nested interrupts. This

capability was first promised by

Microsoft in April 1998.

Microsoft also reported that

continued on page 32



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NeoCore Goes for Speed in XML Database

BY DOUGLAS FINLAY

With first-round financing of \$10.4 million in investment capital from lead investor Baker Capital finally completed in April, NeoCore LLC has begun an aggressive campaign to stake a share of the fledgling XML database marketplace. The weapon: version 2.0 of its XML Information Server database it has renamed the XML Information Management System (XIMS), which is aimed at companies with complex workflows and high-volume transaction processing.

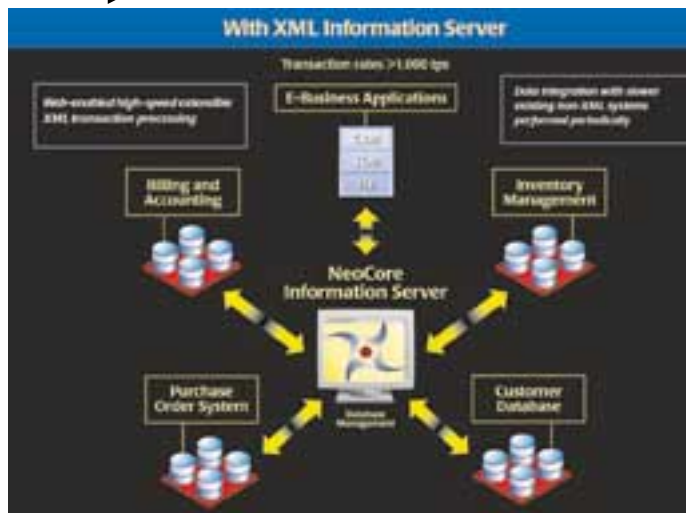
Capital for the company will go toward building brand-name recognition in the XML database market, as well as hiring new developers, said Ken Whittington, NeoCore's (www.neocone.com) senior vice president of XML products, "because the proven technology used in the XIMS is already in place."

New to XIMS version 2.0 is what NeoCore calls digital pattern processing, or DPP, an algorithm that the company claims can search data within an XML database and provide a flat-rate response time regardless of the volume of data in the database. Rather than seeking sequentially, it seeks to match patterns. "DPP's attributes are such that the search time

remains flat for simple requests regardless of the size of the database," Whittington said.

Raman Singh, NeoCore's product marketing manager, said DPP essentially manages information "symbolically, that is, as icons 8 bytes in size containing code and other logical properties of that data that are stored in memory." He said that by passing objects or data through the icon algorithm, part of the result is that the XIMS knows where that icon would live were it in a data store, but that requests instead go directly to the area of memory to get a match. He did say, however, that there were instances when a request for a match could be found only on the disk, which would then cause an increase in retrieval time.

Whittington said the database server's memory capacity does not have to be extremely large due to the size of the icons, adding that "our system is 100 percent deterministic, in that once a developer describes the size of the database, XIMS will use every last bit in that database with no garbage collection. If you process the data symbolically, and each data element is 8 bytes, then there is extreme memory efficiency," he said. The database runs on Solaris and Windows.



The XML Information Management System uses iconization and digital pattern processing to achieve stable, flat-rate search speeds.

"Our minimum server memory configuration recommendation would be 256MB," Whittington said. He said that an XIMS database could scale to 5 terabytes.

Singh pointed out that XIMS uses the XPath query language to retrieve XML requests rather than the newer XQuery language, because "it was the available standard at the time we began development of the XML database." Singh said that the company had also evolved XPath to support more precise query operations. "Using a direct API interface to the core database engine, simple queries such as 'Is

there a Jones in the database?' will operate at over 200,000 transactions per second."

Whittington said that the XML database is not indexed in the traditional sense that relational databases are indexed in terms of columns, rows and tables, but that tags and data are indexed in a metaphorical sense. "Indexing is really what we say when we mean organizing the data," he said, "but what we are really doing is iconizing the data instead."

Kevin Huck, NeoCore's chief architect, maintained that because information into the server already carries structure,

and is modeled in XML, no database design is required.

Dirk Coburn, IDC's research director of the Java and XML for e-business program, had high praise for NeoCore's XML technology, saying that it was indeed impressive for the company to receive funding in an environment where due diligence in bringing forth a valid technology is now a top priority among venture capitalists. "There are a couple of elegant things the technology does, including iconization, which, in an efficiently processable, transportable and processible fashion, can determine precisely what data exists and where," he said.

The other elegant feature, according to Coburn, is the database's digital pattern processing feature which, along with iconization, could set new database benchmark performance records. He said together they would permit on-the-fly creation of virtual indices pointing to where data exists that conforms to the shape of a query.

Version 3.0, according to Singh, due by year's end, will add reporting tools, application builders, transformation support, J2EE and object persistence, and data mining. ■

Kenamea Improves Web Connections

New Web client/server technology bypasses HTTP and HTML

BY ALAN ZEICHICK

The problem with Web-based applications, according to the original chief architect of BEA Systems Inc.'s WebLogic app server, is that they're too flaky. The HTTP and HTML protocols, while fine for viewing a simple Web page, don't have the flexibility and reliability that modern transaction-based applications require. Adding more bells and whistles to the back-end data-processing systems won't solve the problem—the challenge is in the client, and in the front-to-back communication path.

That's why Bob Pasker left BEA and went on to co-found Kenamea Inc. (www.kenamea.com), which is now pilot testing a new Web-based client and server technology designed to address that problem with a

product of the same name.

"Kenamea is a communications platform for sending and receiving data interactively, bidirectionally and asynchronously," said Pasker, who serves as the new company's CTO. The platform consists of a browser plug-in for Windows clients and a Java-based runtime engine that sits on a J2EE-compliant server on Linux, Unix or Windows. There's also what Pasker called a "switch," another server-side Java application that acts as a communications relay between the Windows plug-in client and the Java server code.

What the Kenamea code does, described Pasker, is provide a guaranteed communica-

tion path between the client and server. "When you fill out a Web form and click 'submit,'" he said, describing a typical Web session, "there's an 85 percent chance that the transaction will work correctly. The other 15 percent of the time you'll get a continuous hourglass, a 404 Not Found error, a 500 error, a DNS error or some other problem. Kenamea makes it possible for 100 percent of transactions to complete."

This trick is performed by the plug-in, which Pasker described as lightweight, "only a few hundred K." The plug-in communicates with the Kenamea switch directly, as opposed to using HTTP or HTML, according to



Kenamea guarantees a communication path between client and server, says Pasker.

directives embedded into the Web page's JavaScript code. "All connection management is now intrinsic to the application," said Pasker, thanks to the plug-in. What does this enable? "With Kenamea, the JavaScript can directly communicate with a J2EE app server over the Web without sending HTTP requests. It can invoke EJBs directly from within the JavaScript code." Further, he said, messages can be sent back from the J2EE server to the client and displayed, without having to regenerate the screen—no HTML need be involved, he said.

In fact, he claimed that a J2EE server isn't even required. "Stand-alone Web pages running on the desktop can be clients of a database server," he said, "or directly access the network file system." Another attribute of the software is security, as the message passing from the client to the server runtime is encrypted and authenticated. "It's more secure than SSL,"

Pasker said, "since the header is encrypted as well as the data."

Currently the software is in pilot testing with 100 clients, according to Pasker, and will enter a wider beta by early summer. The general release of the product should be midyear, he said.

In mid-April, Kenamea closed additional funding, acquiring \$32 million in its "C" round.

Pricing has not yet been determined, although there will be two license models: one using a switch hosted by Kenamea and priced according to the number of simultaneous client connections, and the other with an enterprise deploying its own switch and paying on a per-server basis. There will also be per-seat pricing for the Kenamea development tool suite, which Pasker described as being ancillary tools to HTML editors such as Macromedia Inc.'s Dreamweaver and Microsoft Corp.'s FrontPage. ■



Mac OS X

An Overview for Developers

With Mac OS X, Apple asserts its leadership in the advanced technologies and design sensibilities that are the hallmarks of any great operating system.



Mac OS X is a completely rebuilt implementation of the Macintosh operating system. It expands on Apple's technological strengths, such as industry-standard networking capabilities and industry-leading user interface design.

More importantly,

Mac OS X combines those strengths with support for a variety of technologies beyond those typically associated with the Macintosh, such as UNIX and Java 2 Standard Edition. This unique combination of technologies offers developers stability, power, and interoperability, beneath a well-designed, elegant, and intuitive user interface. As a result, Mac OS X presents new opportunities for both development and deployment.

Darwin

The stability of Mac OS X begins with Darwin, the open source core of the system. Darwin integrates a number of technologies, including the Mach 3.0 kernel, operating system services based on BSD UNIX, high-performance networking facilities, and support for multiple integrated file systems. Further, Darwin's modular design lets developers dynamically load such things as device drivers, networking extensions, and new file systems.

Apple and Open Source

Apple is the first major computer company to make open source development a key part of its ongoing software strategy. The core of Mac OS X, Darwin, is itself an open source project. This approach to operating system development allows developers and students to view the Darwin source code, learn from it, and submit suggestions and modifications. Developers can participate in the Darwin open source project by signing up at <http://www.opensource.apple.com>.

Darwin's advanced memory protection and management system ensures reliability by allocating a unique address space for each application or process. The Mach kernel augments virtual memory semantics with the abstraction of memory objects. This enables Mac OS X to manage separate application environments simultaneously, while presenting users with a seamless experience.

Darwin also supplies the following advanced functionality:

- Preemptive and cooperative multitasking.
- Symmetric multiprocessing (SMP) augmented by support for multithreading.
- Real-time support guaranteeing low-latency access to processor resources for time-sensitive media applications.
- An object-oriented device driver programming framework called I/O Kit.

Graphics System

Mac OS X combines three powerful graphics technologies, Quartz, OpenGL, and QuickTime, enabling developers to push graphics beyond anything users have seen on a desktop operating system.

Quartz

Quartz is the foundation of the Mac OS X imaging model. It is comprised of a high-performance, lightweight window server and a graphics rendering library for two-dimensional (2D) shapes. The window server features such advanced capabilities as device-independent color and pixel depth, layered compositing, and buffered windows for the automatic repair of window damage.

The Quartz rendering model is based on the cross-platform Portable Document Format (PDF) standard, enabling developers to easily embed and manipulate PDF data within any Mac OS X application. This yields such benefits as automatic PDF generation and save-as-PDF, automatic onscreen preview of graphics, conversion of

PDF data to printer raster data or PostScript, and a consistent feature set for all printers.

The layered compositing engine used by Quartz allows developers to create unique onscreen effects. It replaces the "switch model" of traditional windowing systems with a "video mixer" model in which every pixel on the screen can be shared among windows in real time. This model allows for smooth transitions between the states of the graphical user interface.

Quartz also provides developers with these advantages:

- On the fly anti-aliasing of graphics and text enabled by the use of a floating-point coordinate system and high-precision vector processing.
- Direct access to the video frame buffer.
- Automatic detection of and benefit from the floating-point coprocessing performed by the Velocity Engine in PowerPC G4 microprocessors.

OpenGL

For three-dimensional (3D) graphics, Mac OS X features an optimized implementation of industry-standard OpenGL. OpenGL is one of the most widely adopted graphics standards today, making code written to OpenGL extremely portable and making generated visual effects highly consistent. It is specifically designed for games, animation, CAD/CAM, medical imaging, and other applications that need a rich, robust framework for visualizing shapes in two and three dimensions.

QuickTime

Mac OS X comes packaged with the latest version of QuickTime, a powerful multimedia technology for manipulating, enhancing, and storing video, sound, animation, graphics, text, music, and even 360-degree virtual reality. It also allows streaming of either live or stored digital video. As a cross-platform technology, QuickTime can deliver content on Macintosh and Windows systems. Augmenting its cross-platform capabilities, QuickTime supports every major file format for images and every significant professional file format for video.

Through the QuickTime plug-in, QuickTime's digital video streaming capability is extended to all popular web



Mac OS X system architecture

browsers. The plug-in supports over thirty different media types and makes it possible to view over 80 percent of all Internet media. QuickTime also features other advanced web streaming capabilities, such as movie "hot spots" and automatic web page launching.

User Interface

The most visible expression of Mac OS X power and technology is its new user interface, Aqua. Apple applies its leadership in user interface design to Aqua, incorporating many of the qualities and characteristics Macintosh users expect, while adding advancements to benefit expert and novice users alike. Ease of use is factored into every feature and capability.

Consistent with Apple's design philosophy, visual enhancements serve not just as beautiful images, but as cues to the functionality and operation of the system.



A prime example of this user-focused design is the use of "sheets." These non-modal dialog boxes attach directly to the title bar of the relevant document,

intuitively linking document and action. The non-modal nature of sheets prevents applications from hijacking the system and interrupting user workflow.

Interoperability

Mac OS X makes unprecedented use of technologies and standards that allow interaction with other platforms. This affords both developers and users the opportunity to use Macintosh computers in new places and in new ways. Mac OS X manages multiple file and networking formats and supports a wide range of industry-standard protocols. Based on an enhanced VFS design, the file system supports multiple local formats and complies with POSIX file system semantics.

Hardware connectivity is simplified through built-in support for Ethernet (10/100/1000Base-T); serial connections for modems, ISDN, DSL; wireless networking through AirPort (IEEE 802.11); USB (Universal Serial Bus); and FireWire (IEEE 1394).

Java 2 Standard Edition

Mac OS X ships with a complete implementation of Java 2 Standard Edition (J2SE) version 1.3, including the HotSpot client virtual machine. Benefits of Apple's Java

implementation include access to Aqua user interface elements "for free" through Swing, native preemptive multitasking, automatic multiprocessing support and management of JAR files as shared libraries.

This last advance improves the speed of execution and reduces the RAM footprint of applications which rely on the same archive, such as applications within suites. Mac OS X also plugs the Java windowing toolkit more directly into the Mac's native windowing toolkit, giving Java applications and applets the graphics performance benefits of Quartz.

Backward Compatibility

To afford users a gentle migration path, Mac OS X builds on Darwin's ability to manage multiple application environments simultaneously. The Classic environment is actually a full version of Mac OS 9.1 running in a protected memory space under Mac OS X. As a result, most Mac OS 9 compatible applications will run side-by-side with Mac OS X applications.

Additionally, developers can code for Carbon, a native Mac OS X environment that allows programmers to take advantage of advanced Mac OS X features while retaining compatibility with the installed base of Macintosh computers running Mac OS 8.1 and later.

Development Options

There are multiple ways to develop for Mac OS X. Individual skills, preferred languages and tools, target user base, and time to market concerns will influence a developer's approach:

Carbon

The Carbon APIs are based on earlier Mac OS APIs. While Carbon allows applications to take advantage of Mac OS X features such as multiprocessing support and the Aqua user interface, Carbon is specifically designed to allow compatibility with older versions of the Mac OS.

Cocoa

The Cocoa application environment runs natively under Mac OS X. For those who wish to develop for Mac OS X using rapid application development (RAD) tools and object-oriented techniques, the Cocoa frameworks provide a fast and complete way to do so. These frameworks offer both Java and Objective-C APIs.

Java

The Java application environment allows development and execution of Java programs on Mac OS X, including



100% Pure Java applications and applets. The J2SE implementation in Mac OS X is designed to allow maximum Java application portability. Developers can also use the Java development language to write a Cocoa application, allowing Java programmers to use a familiar language to develop for a new platform.

UNIX

Since Mac OS X is built atop a UNIX kernel, porting UNIX-based applications to the platform is relatively easy. This enables enterprise-level UNIX products to enjoy parity with consumer and business applications on a commercial desktop platform.

Mac OS X offers opportunities for developers from many different backgrounds to port and build innovative and compelling applications.

And the best way to get started is with the Apple Developer Connection:

Apple Developer Connection membership programs offer benefits such as pre-release software seeding, code-level technical support, news and technology updates, and discounts on business support services. Developer documentation and resources are available free at <http://www.apple.com/developer>.

To learn more about developing for Mac OS X, visit the Mac OS X development website at <http://developer.apple.com/macosx>.

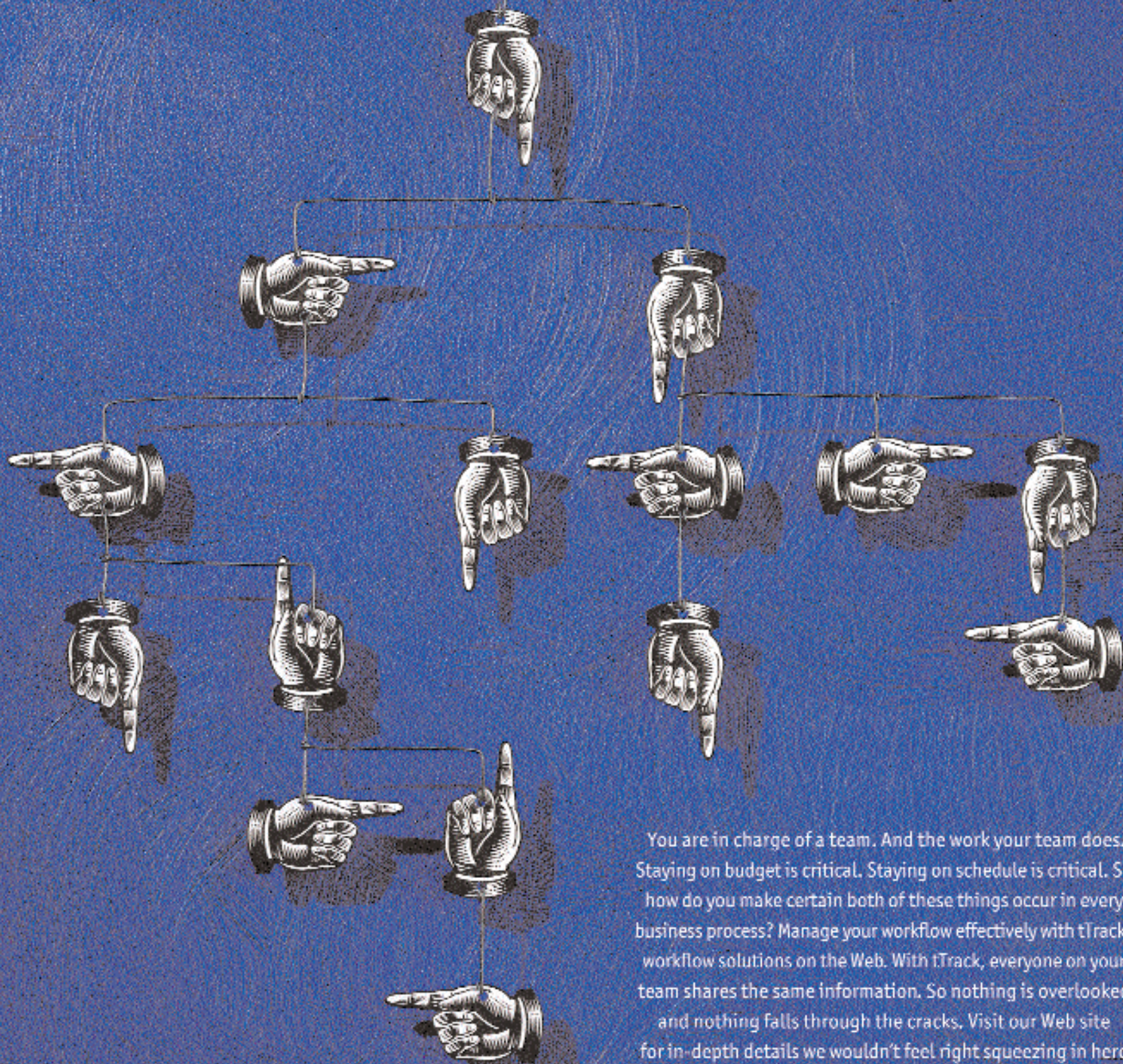
To request a free **Programming for Mac OS X CD-ROM** containing tutorials, sample code, and technical documentation designed to provide step-by-step descriptions of the methods developers can use to create Mac OS X applications, visit <http://developer.apple.com/sdtimes.html>.



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Giving Site to the Visually Impaired

Pop Charts D provides link to rich text beneath Web charts and graphs

BY CHRISTINA PURPI

Visually impaired people will soon be able to access most information contained on government Web sites by using Pop Charts D from Corda Technologies Inc., which is also being offered to businesses looking to reach people who, according to industry experts, are now largely underserved by the Internet.

Subsection 508 of the federal Rehabilitation Act mandates that all government agencies and any other federally funded site must provide disabled persons access to their Web sites by June 21. It is estimated that roughly 800,000 visually impaired people use the Internet.

Prior to the introduction of Pop Charts D, there was no way to create a dynamic, descriptive text equivalent to information underlying charts and graphs on Web pages, according to Michael Robertson, vice president of sales and marketing for Corda. For example, a chart may show that 17 percent of a household's money is spent on heating oil, but there has not been a way for a visually impaired person to learn the actual dollar amount. In order to eliminate this problem, Corda (www.corda.com) has developed the new version of its Pop Charts Java-based data-driven visualization tool to include a "D-link" that will enable visually impaired people to comprehend charts and graphs through descriptive text interpretations that are then spoken through a computerized voice. "We saw a wide-open niche and went for it," said Robertson of Corda's move into this space.

The D-link provides descriptive text underneath the charts, allowing visually impaired users to drill down in a chart to gain richer meaning than they would be able to glean from static charts with voice capability, in the way a sighted user would be able to see pop-up text when moving a cursor over certain areas within a chart or graphic.

Currently, Robertson said visually impaired people using the Internet access it via audible screen reader software, such as GW Micro Inc.'s Windows-Eyes, Henter Joyce's JAWS and IBM's HomePage Reader, which read text content to the

user in a computerized voice. Pop Charts D runs on Java and, according to the company, supports all operating systems and major application servers.

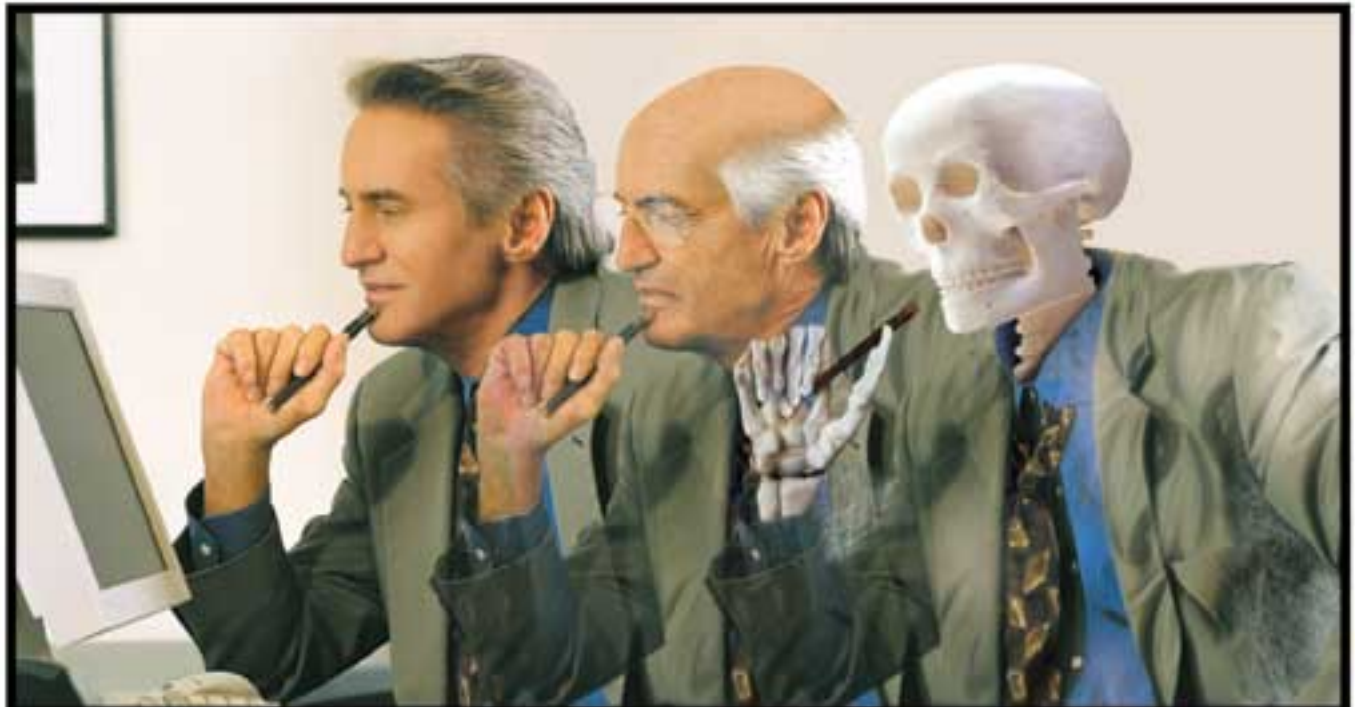
The National Cancer Institute has already begun to apply Pop Charts D to its Web site.

The new law does not require private businesses to

provide this service. However, in order to offer support for the visually impaired, large nongovernmental enterprises have also expressed interest

in integrating Pop Charts D into their Web sites, according to Corda.

Government agencies can acquire Pop Charts D through the General Services Administration for \$10,070, and consumer businesses can purchase Pop Charts D from Corda at retail price for \$10,600. ■



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Kabira Automates Integration Process

Platform extensions reduce coding, speed time-to-market

BY DAVID RUBINSTEIN

Expanding its offering in the network application integration arena, Kabira Technologies Inc. has introduced two new extensions to its ObjectSwitch application platform that the company claims can eliminate much of the hand-coding that had been necessary to tie together business software and hardware, cutting cost and time.

The first new product, Adapter Factory, addresses what Grover Righter, Kabira's (www.kabira.com) vice president of technical strategy, claimed are problems with the way adapters have been created, such as limited functionality of adapters, the need for extensive hand-coding once the interface is delivered, and interfaces becoming obsolete due to more frequent software and hardware updates. "We came to the conclusion that automatically generated adapters based on stan-

dards was the way to go," Righter said, adding that Adapter Factory supports CORBA, Java, XML, COM and SQL.

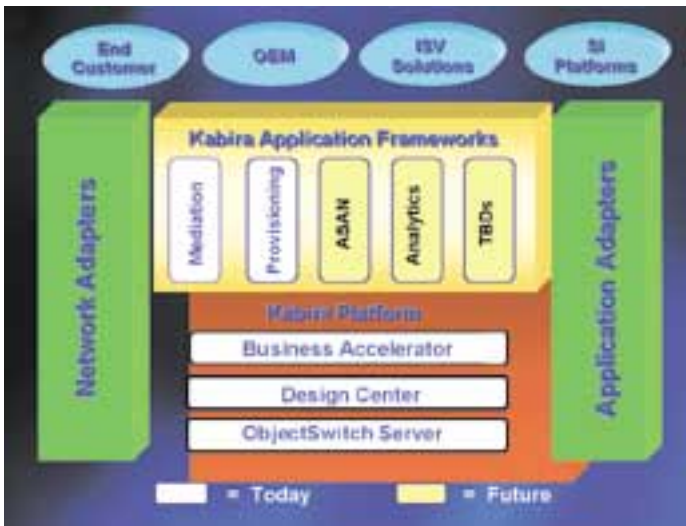
Adapter Factory works by creating couplets of an interface specification and a transport protocol, which are then put into an adapter compiler that generates code to create a service engine, which is "basically an adapter to the system," Righter said.

The benefit of this type of adapter model, Righter said, is that the adapter supports the full functionality of the system it's connecting to. "If there are 47 features in a billing system, we get 'em all. There's none of this subset stuff." On the client side, he added, users can keep up to date with all software upgrades without having to create new adapters by hand. "It took us two-and-a-half months to build an adapter by hand," Righter

said. "We regenerated it in 12 minutes" using this technology. The Adapter Factory is commercially available and is sold as an extension to the ObjectSwitch platform. Price is based on the number of adapters generated, he said.

Kabira's second extension is called Business Accelerator, which is a business process modeling environment driven by UML activity diagrams, Righter explained. "We're trying to create a true carrier-class architecture that is a true [Model Driven Architecture]," Righter said. The Model Driven Architecture, as put forth by the Object Management Group, says that manual workflows can be componentized into building blocks that can be assembled as needed based on the UML activity diagram, he added. The diagrams instruct the component modules to interconnect in a certain way, and the Business Accelerator does this in a graphical environment, Righter said.

The ObjectSwitch platform now can use the new adapters to take proprietary information from foreign systems and convert the data from flat files to objects, which then are managed in a cached repository. Once the data is in, business logic is needed to determine what to do with the data. This is generated with the Business Accelerator based on UML, which creates what Righter called network services engines for handling these transactions. ■



Adapter Factory and Business Accelerator extend Kabira's platform.

Flashline Gets Web Interface

BY DAVID RUBINSTEIN

Flashline.com Inc. has taken advantage of Sun Microsystems Inc.'s Java Web Start technology to move its Component Manager Enterprise Edition from a client-side application to a browser-based installation.

A key piece to CMEE, according to Charles Stack, Flashline's CEO, is a registrar that sorts an enterprise's component repository into classifications and makes the final determination on whether a newly written component is added to the repository. "The problem was, the registrar technology

wouldn't work in the Web," said Stack. "The JNLP [Java Network Launching Protocol], which allows you to launch full Java applications, not just applets, from a Web page, made it work."

According to Sharon Fay, Flashline's product manager (www.flashline.com), a thin-client piece that includes Web Start remotely invokes the registrar application from a server and with JNLP runs it as a fully robust application without having it loaded locally.

All of this takes place behind a company's firewall to protect the intellectual property created

and stored in CMEE, which costs \$400 per user per year in addition to an undisclosed enterprise licensing fee.

Through the use of JNLP, Stack said, users get direct access to tools to manage the component repository while controlling access given to remote users. "Most of our customers have heavily distributed development teams," Stack said.

Fay said the advantage to this approach also can be seen in shops where development is outsourced. "They can deposit their completed work right into the repository," she said. ■

News Briefs

COMPANIES

Acucorp Inc. has enhanced its Extend 5 program for Linux to allow developers to move ACUCOBOL-GT applications to **IBM Corp.**'s S/390 mainframe and eServer z900 environments without recompilation. Extend 5 offers products for Internet deployment, graphical COBOL development, data access, distributed computing and increased programmer productivity . . . A partnership between **LogicChain Inc.** and **PointBase Inc.** lets them co-develop and co-market mobile applications that use both LogicChain's client/server applications and PointBase's database software . . . **Hewlett-Packard Co.**'s partnership with **WebGain Inc.** will permit WebGain to develop versions of VisualCafé Enterprise Edition, WebGain Studio, TopLink and Application Composer that are optimized for the HP Netaction family of products, which includes the Total-e-Server application server . . . **Sitraka Inc.** has ported its JProbe performance-tuning suite to HP-UX. The software also supports Linux and Windows . . . **MicroEdge Inc.**'s Early Adopters Program will allow mainframe developers to add input into the design process of MicroEdge's Visual SlickEdit for OS/390. Visual SlickEdit will offer a GUI executing in the z/OS and OS/390 environments. Using IBM's Unix Systems Services, files will be accessed directly on the server for maintaining, compiling, building and executing programs.

PRODUCTS

Sun Microsystems Inc. is now shipping the **Java 2 Platform for Linux**, which provides embedded application developers access to the entire Java platform for Linux, and the **Java 2 Platform Micro Edition** for Wind River Systems Inc.'s VxWorks, which is Wind River's real-time operating system . . . Vignette Corp. has enhanced its **Vignette Business Integration Suite (VBIS)**, which enables developers to graphically build process flowcharts on any terminal and simply select the necessary adapters from a standard toolbar to bypass any coding. It now includes clustering support for BEA's WebLogic and multiple process deployments for better scalability. VBIS supports J2EE . . . Great Bridge LLC has released a prepackaged version of PostgreSQL open-source database for Solaris. Called **PgSol**, it provides all the tools, interfaces and documentation found in the PostgreSQL Linux version. PgSol can be installed through the Solaris Package Manager . . . Aladdin Systems Inc.'s **Stuffit Engine Software Developer Kit version 6.0.1** now provides data compression APIs for MacOS X developers . . . Aha-soft's **ArtIcons** provides developers with the capability to create and edit icon images and manage icon files and libraries. The program scans files and folders for icons, deletes duplicate icons and arranges icons into libraries. A 30-day evaluation copy is available at www.aha-soft.com . . . ESPS Inc.'s Liquent division has released the **Xtent** rendering engine that converts files from more than 145 source formats into open XML schemas that can then be outputted to WML, XML, HTML, XHTML, SVG, PDF, OEB and paper.

PEOPLE

Embedded software provider Green Hills Software Inc. has named **Peter H. Foley** as CFO. Previously, Foley was COO of CyberXpo, a media networking company . . . **Charles Ungashick** has joined Isoviva Inc. as vice president of product marketing. Ungashick was formerly vice president of marketing at SilverStream Software Inc. . . . **F. William Conner**, former president of Nortel Networks' eBusiness Solutions Group, has been named president and CEO of Entrust Technologies Inc.



STANDARDS

The Association for Information and Image Management (AIIM) is studying a way to define XML in facilitating the exchange of information managed by document-management technologies. The study focuses specifically on document image files to provide development of an international standard with **ISO TC171/SC2/WG2** . . . The W3C has recommended the **Modularization of XHTML**, a specification that defines a method for separating familiar and related HTML functionalities, such as lists, forms, tables and images into modules. ■

Sun's JXTA Positioned to Unify Peer-to-Peer Protocols

BY DOUGLAS FINLAY
AND ALAN ZEICHICK

The Web, HTTP and TCP/IP revolutionized networking and created the foundation of the Internet—in large part because they were universally adopted protocols. But their primary benefit comes into play, according to Sun Microsystems Inc., in a client/server architecture. Now, as peer-to-peer computing across heterogeneous networks becomes more popular, Sun believes that there's a need for a grand unifying protocol designed specifically for that application. That's the foundation for Project JXTA, hinted at by the company for months but released as an open-source project in late April.

"We think that peer-to-peer computing is shaping up. The field is beginning to move quite fast, and we wanted to provide our ideas about it in version 1.0 of JXTA to developers in an open-source environment so they could see what we are thinking and then pro-

vide feedback to shape the code in a shared environment," said Li Gong, Sun's director of engineering for Project JXTA (www.jxta.org).

The goal of JXTA—short for juxtapose, or side-by-side—is to allow collaborative and peer-to-peer computing that's independent of any underlying network transport protocols, said Gong, adding that some devices might speak TCP/IP and HTTP, others could be connected via Bluetooth, and others might be mobile telephones or pagers, but all could interoperate using the JXTA protocol.

Sun's technical documents describe Project JXTA as containing three layers: a core layer, a middle "services" layer and an application layer. The core layer includes protocols and building blocks to enable key mechanisms for peer-to-peer networking, including discovery, transport and the creation of peers and peer groups. The services layer provides APIs for generic services required by peer-to-

peer applications. The application layer supports higher-level functions, such as file sharing, resource sharing, monetary systems and distributed storage.

Devices running the JXTA protocol are organized into peer groups—an ad hoc collection of devices that have agreed to publish or share information among themselves. According to Sun, the protocol includes a provision for a peer group to require a specific security scheme to authenticate members or encrypt communications. Communication between the peers is via "pipes," which are asynchronous links dynamically bound at creation time that enable developers to build highly available services. Pipe connections can be established independently of a peer location, device type or data type.

According to Gong, the open-source collaboration Web site for the project, being managed by Collab.Net Inc. (www.collab.net), not only offers project documentation and

downloads of source and binary code, but would also enable open-source developers to sign up to collaborate on code development.

He maintained that developers who currently offer services or applications over a peer network must pick the most popular protocols used by those peers and write scripts in order to communicate with them. "But with JXTA, they only have to write the application or service once, and then it can be distributed to many peer systems without the need to write code for each peer protocol," he said.

"We hope that JXTA will do for the next generation of distributed computing applications what TCP/IP did for interoperability of networks over the Internet," said Juan Carlos Soto, Project JXTA's group manager of product marketing, and manager of the jxta.org community. He said the goal of JXTA was to expand the Web in order to tap into smart devices of the future

and enable them to interoperate.

According to Sun, the Project JXTA code available on the Collab.Net site is licensed under the same general terms as the Apache Web server code. This license allows developers to build JXTA-compatible applications and services as either open-source projects or proprietary projects.

The release of Project JXTA into the open-source community makes good sense for both Sun and the advent of future peer-to-peer projects, according to Anne Zieger, principal analyst at Peer-to-Peer Central. "Sun needs JXTA because they won't have a major voice in peer-to-peer computing just because they're a major software and Unix vendor," she said. "The industry needs it because there's no focal point for peer-to-peer development, especially on the client side. To the extent that open source is important for the peer-to-peer movement, you need someone like Sun to crystallize the technology." ■

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Apache Server 2.0 Goes to Beta

BY EDWARD J. CORREIA

April's announcement by the Apache Software Foundation that it has released version 2.0 of the Apache Web server should come as welcome news. It will be the first major update

to the software since the current version 1.3 was released in June 1998.

According to the ASF, which runs the open-source project, the new version will deliver significant performance enhance-

ments, including support for threads and improved multi-processor support, and will add caching, server-side data filtering and support for IPv6.

Ryan Bloom, vice president of the Apache portable runtime

project, said that support for threads will give the software a big performance boost, particularly as the product scales. The main difference, Bloom explained, is that instead of issuing one process per request, as in

version 1.3, version 2.0 issues one thread per request, with multiple threads issued by each separate process. "So by having each process doing the thread handling, we become much more scalable," Bloom explained.

Also significant is the Apache Portable Runtime (APR), which Bloom said "lets us ignore the operating system when we want to deal with network I/O, file I/O and creating processes and threads." The new architecture abstracts about 90 percent of the functionality from the operating system and permits administrators to optimize the server software for the hardware and operating system it is running on. The APR also eases software portability.

But perhaps of most significance to developers is support for input/output filtering, which in essence permits server plug-in modules to modify the output of other modules before being sent to the Web client, said Bloom. "One of the things that Apache has never had is a cache of pages that have been sent. Filters make it easy to cache data as it is sent for performance improvement."

Apache will now also be able to filter data through a variety of interfaces, including C, Perl and PHP, Bloom said, and developers need not know the source of the data in order to build a filter. "With [Apache] 1.3, you could only modify data if you knew where it was coming from. Now the Web server figures out where it is coming from and sends it to the module that is modifying the data," simplifying the process, for example, of converting XML through XSLT to HTML, Bloom said.

And because filters can be plugged in and out on-the-fly, "one of the things that we all expect to be able to implement is request upgrading," he said. For example, if a user requested a secure connection, the server could plug in an SSL module dynamically. "This is going to be a big advantage for us," he said, although Bloom did concede that there are no browsers that support the feature yet.

The beta version of Apache 2.0 is available now and can be downloaded at <http://httpd.apache.org>. A release date has not been announced. ■



I/O filtering is most significant for developers, says the ASF's Bloom.

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A New Make, Model for Applications

Secant rebrands modeler, servers to reflect new OMG architecture

BY DAVID RUBINSTEIN

In an effort to better connect to its fast-growing UML market, Secant Technologies Inc. has renamed its software line ModelMethods and has released several rebundled products under the new flag.

Embracing the Model Driven Architecture as described by the Object Management Group Inc., Secant founder and CTO John Pompeii said, "Time-to-market and application complexity have come to a point where there isn't much of a choice. [Modeling] is just going to happen."

Secant has created a new ModelMethods name for its Extreme software line, including new Object Integrator and Enterprise Server products, according to Jim Holtz, president of Secant (www.secant.com). Object Integrator combines Extreme Persistent Object Services for Java and C++ and Rose Secant Extreme Link to provide object persistence in multitiered applications. "It's really O-R mapping with hashing and shared cache," Holtz said.

Enterprise Server brings together Extreme Enterprise Server for EJB and C++ for distributed transactions, load balancing and failover, among other features. Also included is the Rose link, which the company says allows developers to model EJBs and containers in Rose and have the bindings automatically generated. "What's left is the customization," Pompeii said, which he noted can be saved from iteration to iteration.

The ModelMethods software automatically generates much of the middleware code within Java and C++ applications required to run them in a distributed environment. "We found that since most code within most applications is for middleware, we were generating 60 to 80 percent of the total code," Holtz said, which in ModelMethods connects the application to Secant's J2EE-compliant app server. Pompeii indicated that Secant is very close to "getting ramped up" on BEA's WebLogic server, and support for other servers is intended in future releases, he said.

Secant hopes to bring that number nearer to 100 percent of code generation with code

"emitters" that carve into code for workflow processes, business rules, Web applications and client-side computing. Emitters for the client and rules are in

alpha, Holtz said, while workflow and Web emitters are still in design. As with other code-generating modeling tools, updates to the application can be made in

days or months rather than years, reducing time-to-market and development costs.

ModelMethods software has been designed to integrate with

other development tools that support Model Driven Architecture, such as Rational Rose, and future releases will support TogetherSoft's Together Control Center. ModelMethods can model CORBA or Java, Holtz said, and the company is studying .NET and generating XML views out of a model. ■



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VelociGenX Creates 'XML Wrapplets' to Build Apps

BY DOUGLAS FINLAY

Targeting established enterprise developers as well as independent software vendors, VelociGen Inc.'s new VelociGenX is middleware that links existing applications through

XML while accessing diverse data sources to create new applications for dissemination and discovery on the Web.

"Our software is a platform for integrating applications and data sources and making them

interoperable," said Parand Darugar, VelociGen's (www.velocigen.com) co-founder and president. Darugar explained that the software takes data from existing applications in a variety of data sources, includ-

ing *n*-tier systems, and wraps it as an XML component or, as he called it, an "XML wrapplet." A graphical tool enables the developer to choose the type of component he or she wishes to wrap the data as, such as a data-

base component or a Web services component, to communicate with business partners.

The reusable components can be linked together in the business process to create meta-applications, Darugar said, with each application being configured via a simple point-and-click screen. Once the application is developed, it is then sent to any number of devices to be run, because of the XML applications' ability to scale.

Available now, pricing starts at \$50,000, which includes two developer licenses and a run-time license. ■

MP3.com Offers Visual Basic Components

BY ALAN ZEICHICK

Though there may not be too many uses for traditional corporate desktop applications, Visual Basic developers creating games, kiosks or even self-running presentations now have the option to include streaming music with their software, thanks to new APIs from online music service MP3.com Inc.

Offered free of charge, the Visual Basic components provide Internet-based access to MP3.com's Music InterOperating System, which allows applications to play MP3-encoded sound files stored on the Web site's public areas. Although most MP3s contain music, the files might also contain other audio content, such as speeches or presentations.

Previously, the only developer tools available from MP3.com were for C/C++ developers, according to the company.

The new tools consist of three ActiveX controls and a COM DLL. They can be downloaded after a free registration at <http://developer.mp3.com>, and can be redistributed royalty-free.

MP3.com's site also contains related C/C++ APIs, which allow music files to be transferred from MP3.com to handheld devices and to perform CD identification based on unique album ID codes. The company also has an XML data feed that provides remote access to information on its Web site. ■

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Two Approaches to Managing Change

CA takes end-to-end view with enterprise CM solution



Serena's ChangeMan WCM integrated for code, content

BY DAVID RUBINSTEIN

The issues of change management involve mainframes, distributed platforms and the Web—and a new suite from Computer Associates International Inc., long a player in the burgeoning change-management space, addresses each of those areas.

The Enterprise Change Management Solution, which supports Windows and Unix, is the second phase of what the company calls a four-pronged “managed e-business development solution.” The first phase was an update to the company’s Erwin data-modeling solution, announced in late March, and phase three—an application development solution involving the COOL products CA acquired with Sterling Software Inc.—was to be announced by the end of April at the Edge 2001 conference. The fourth phase is a process- and project-management solution.

The Enterprise Change Management Solution comprises an enhanced CCC/Harvest distributed change-management tool; WebCM for content management; and the new Endeavor Webstation, which provides a Web interface to the Endeavor mainframe change-management tool. According to CA’s Gregory Clancy, brand manager for application life-cycle management, the suite gives CA a competitive advantage in the market because it covers the complete system from mainframes to the Web. “Our strength is that we have all the products in-house so we can control the integration and delivery of products,” Clancy said.

The repository-based CCC/Harvest has been upgraded to include a Web interface to simplify access, forms automation and enhanced metric tracking and auditing, “to give management control over change processes,” said Melissa Borza, business manager for life-cycle management.

The content-management solution WebCM is the latest release by CA of the tool it acquired from Platinum Software Corp. in 1999 and renamed MasterIT, and is designed to allow nontechnical organization members to manage content via graphical views of a Web site’s structure. WebCM includes



CA covers changes from mainframe to Web, says Clancy.

a virtual staging server, CA’s testing area where users can ensure content is correct before posting it live to the site. From this server, content can be deployed to a single server or to multiple servers in a Web farm, Borza said, and the Web site can be synchronized with the WebCM repository.

Endeavor Webstation is a new product that creates a single point of entry into Endeavor, CA’s existing change-management system for OS/390 and MVS development. The Web interface simplifies the process of alerting team members to tasks they are required to perform, or that a change has occurred, Borza claimed.

“The strategy is about helping organizations improve the quality of what they’re delivering,” Clancy said. “It’s about developer productivity as well as pulling all the pieces of the life cycle into a cohesive solution.” ■

BY DOUGLAS FINLAY

Developers, their managers and QA personnel struggling with tracking Web content change and its code to ensure that the correct information is always being published may warm to Serena Software Inc.’s ChangeMan WCM Web Code and Content Management program, software that tracks and manages within an integrated environment both the changes to content and the code generated for it.

“Many companies work on home-grown systems and string content in certain places,” said Chuck Hendrickson, Serena’s (www.serena.com) director of product marketing. “If they have an advanced program, it may have some sort of content management, but if not, there will be a lot of sweat and hard work to manage change to the content while tracking its code.”

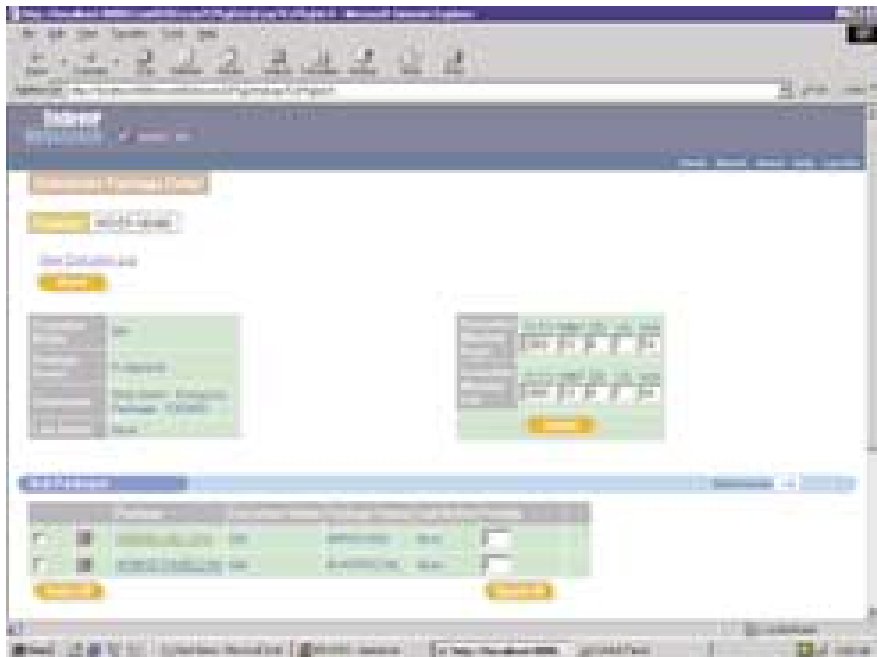
The code and content-management market is a growing one, with such companies as Merant, Rational, StarBase, TogetherSoft and Vignette offering solutions to the problem, which has been exacerbated by the explosion of the Internet as a commerce exchange. But Hendrickson maintained that WCM is more tightly integrated than offerings from other vendors because it is an evolution of its popular Software Change Management technology—which focuses specifically on managing change in content—and because other vendors, such as Rational, must take two different products and integrate them together, often resulting in a less-than-purely seamless approach for developers in managing both code and content simultaneously.

Hendrickson added that while code and content change now seems manageable to IT organizations, “as the amount of work increases, it just won’t scale within the enterprise without the need for even more work.” He maintained that the work is compounded as several different departments within the enterprise add content changes. “Too many people are working in collaboration and putting too much information out there, so something gets missed,” he said. Erroneous airline flight costs, mortgage rates and other retail prices are published to the Web, ultimately increasing a corporation’s liability, he said.

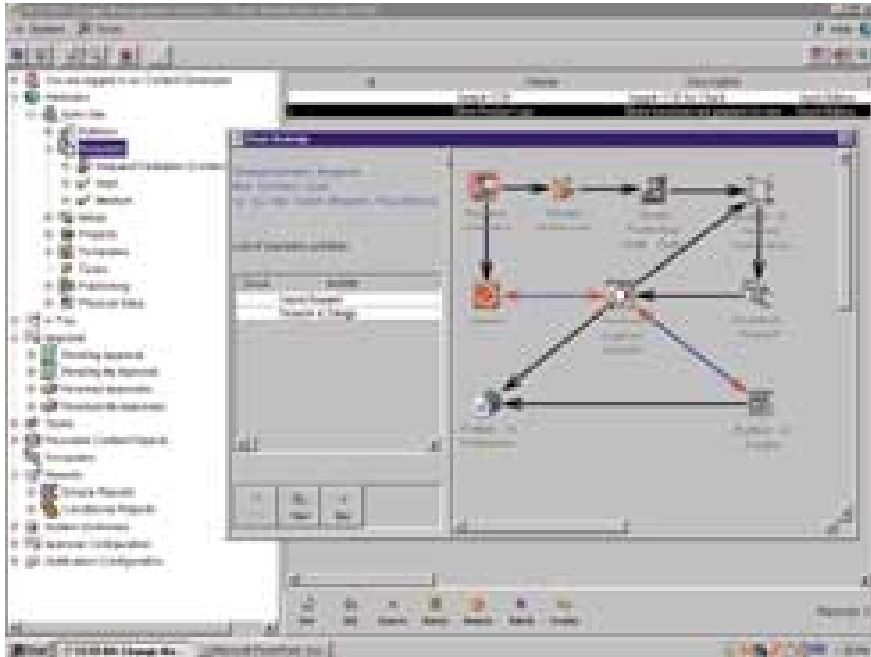
ChangeMan WCM ensures that a stable process is followed when publishing new information to the Web so that all code and content changes are viewed and reviewed by managers before being published, he said. “The program provides workflow management, life-cycle management and request management to help managers and their developers coordinate and collaborate with other departments involved in Web operations,” Hendrickson said. He said it also allows for testing new code before deploying onto the Web.

The program provides a GUI environment in which managers and developers can view projects generated by various departments by opening them up to see the content and code generated from them to be added to the Web. The workflow engine sees where the overall process and project is at any time.

Available now, ChangeMan WCM is priced according to the number of seats purchased and servers used. ■



Endeavor Webstation provides an interface to CA’s mainframe change-management tool.



ChangeMan WCM provides a GUI environment for the changes to be validated before implemented.


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SD EXPO

< continued from page 1

write code to generate a format," he said. The XML Publishing System will go into beta testing in September.

Tradia Inc. introduced its InstantXML software that the company claims can automati-

cally turn Java-based applications into Web-based applications or Web services. Nequine Navab, Tradia's (www.tradia.com) vice president of engineering, said that the program uses Java APIs to discover methods of a class, identify those methods and then generate a Web services applica-

tion from those methods without the need to generate any new code.

She added that once a Web service has been exposed to the Web, it would be possible for Visual Basic programmers using .NET to find the service, bring it in and access it from within a VB application using

the XML data types now available in .NET, essentially providing a way to use Java components within a Microsoft environment. InstantXML will be in beta testing until June; no prices have been announced.

McCabe & Associates Inc.'s strength, says the company, is in tools for managing

the development of very large applications, and the latest update to its TrueChange software configuration management suite is designed specifically for large institutions and government projects.

The update, TrueChange 2.5, which was scheduled to ship one week after the SD show, includes new features for phased security, according to John Brown, principal consultant for McCabe (www.mccabe.com). Now a requirement for federal development projects, as well as those undertaken by large financial institutions, he said, this feature provides only specified developers with read-only and read-write access to authorized portions of the software code base and requirements documents. The 2.5 version also runs on Red Hat and SuSE Linux, as well as Windows 2000, said Brown; the software had already supported Unix, VMS and Windows NT.

The 3.0 release of TrueChange, hinted Brown, will be geared more toward the Web, with the ability to work with both Java and C++ code in a browser. This release should be ready in the third quarter of this year.

Developers familiar with Bertrand Meyer's Design by Contract concept may be interested in **ParaSoft Corp.**'s new Jcontract tool, unveiled at the show. Although DbC was first unveiled in Meyer's Eiffel object-oriented language, there's no reason why the concept can't be used with other languages such as Java, according to ParaSoft (www.parasoft.com) chairman Adam Kolawa.

Jcontract allows developers to assign contracts—commitments that the program will be left in a certain state after execution—to each piece of code in an application. Each piece of code can also contain assumptions—that is, statements that it expects the code to be in a certain state when that piece of code is invoked. Through testing, said Kolawa, runtime errors can be found that might not normally be caught during regression testing. Jcontract uses its own compiler to turn contracts and assumptions into compiled code.

Currently available, Jcontract is priced at \$1,500 per developer seat, or \$4,500 when bundled with ParaSoft's Jtest unit-testing tool. ■

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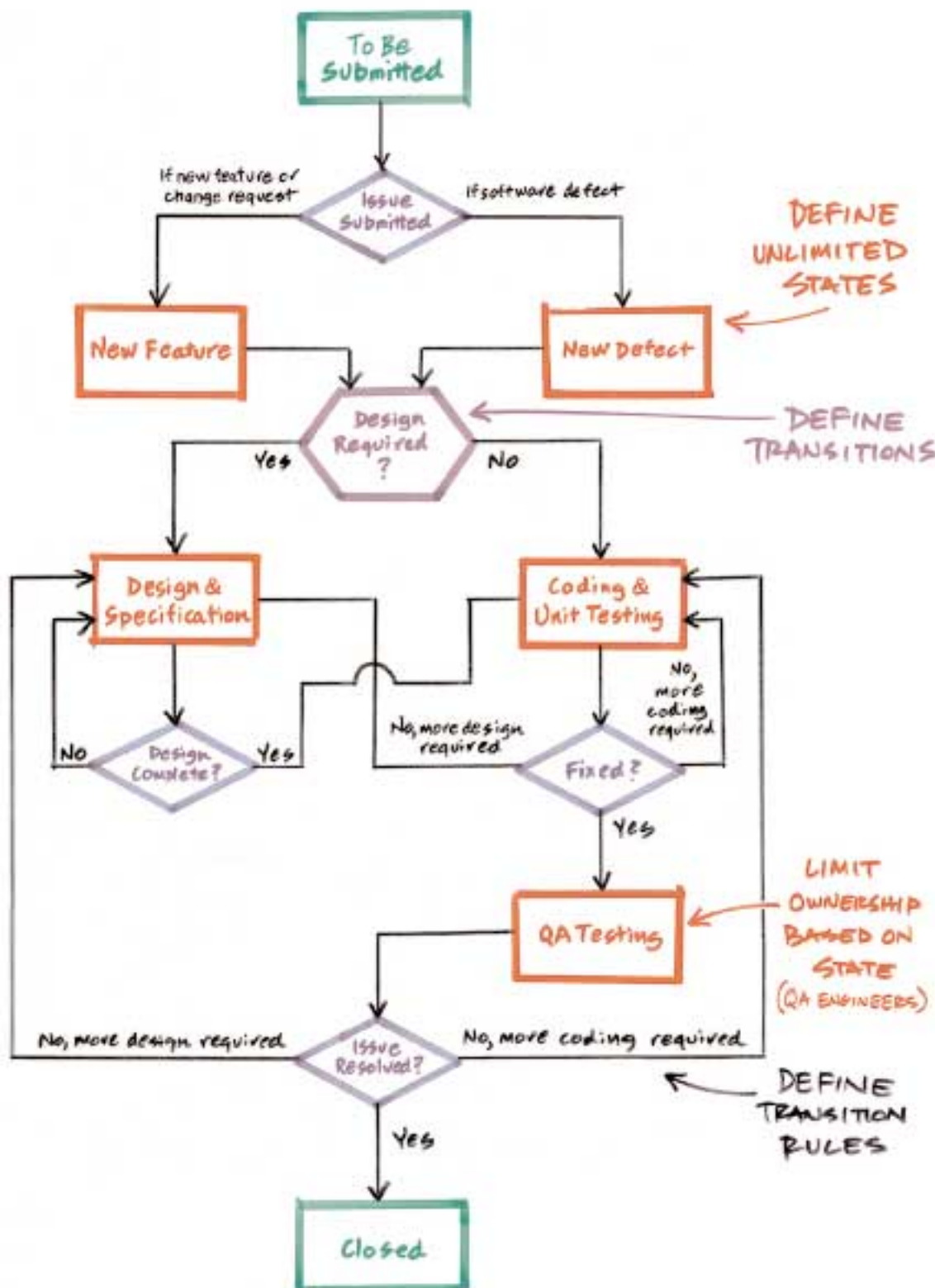
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Visual UML 2.7 Models Apps for the Web

BY DAVID RUBINSTEIN

Modeling applications for the Web has just gotten easier, according to Visual Object Modelers Inc., which has released its Visual UML 2.7 modeling tool with stereotypes for Web appli-

cation modeling, broader code generation and reverse-engineering functions, as well as improved documentation and interoperability capabilities.

Rob Pritt, CEO of Visual Object Modelers ([www.visual](http://www.visualobject.com)

[object.com](http://www.visualobject.com)), said the Web application modeling stereotypes follow the definitions first established by Jim Conallen of Conallen Inc. In a Web application model, according to a paper written by Conallen, class dia-

grams are created to show the structure of the Web site and interaction diagrams are used to show how the applications work with one another. Visual UML 2.7 also allows for business object modeling and data model-

ing and now provides SQL DDL schema generation, he said.

The goal of the tool, Pritt said, is to provide an easier, lower-cost alternative to such competing products as Rose from Rational Software and GPro from Embarcadero Technologies.

Visual UML 2.7 also has added interfaces for Microsoft's Visible Developer—the old VB Mentor—and Western Ware's CC-RIDER C++ source code analysis tool. "We're working with another company to combine tools to do code generation and reverse engineering for C++ and eventually Java," Pritt said. Also, a Visual FoxPro interface has been integrated into Visual UML 2.7, where in the past it had been an add-on, Pritt said, and the XML interface has been given import capabilities.

According to Pritt, the modeling tool is fully compliant with UML 1.3, with support for all diagram types, and is licensed on a per-user basis for \$495. ■

IPLANET TOOL SET INCLUDES APP SERVER

BY DOUGLAS FINLAY

Looking to provide developers with a standards-based environment in which to build J2EE applications, iPlanet E-Commerce Solutions, a Sun-Net-scape Alliance, has released a new set of developer tools that includes the iPlanet Developer Pack, an Enterprise JavaBean (EJB) Library and an evaluation version of the J2EE-compliant iPlanet Application Server, Enterprise Edition 6.0.

Sanjay Sarathy, iPlanet's (www.iplanet.com) director of marketing for iPlanet application services, said the iPlanet Developer Pack was designed to provide developers with a seamless path from their own development tools to the iPlanet Application Server for deployment, by providing plug-ins and documentation from their tools into the server. "We're not saying to developers, 'The only way you can develop against our application server is through our own proprietary tool,'" he said.

The EJB Library, he said, was an outgrowth of the trend toward reuse of components. The Developer Pack, available now, is \$1,295 per developer seat. The EJB Library and evaluation version of the application server are free. ■



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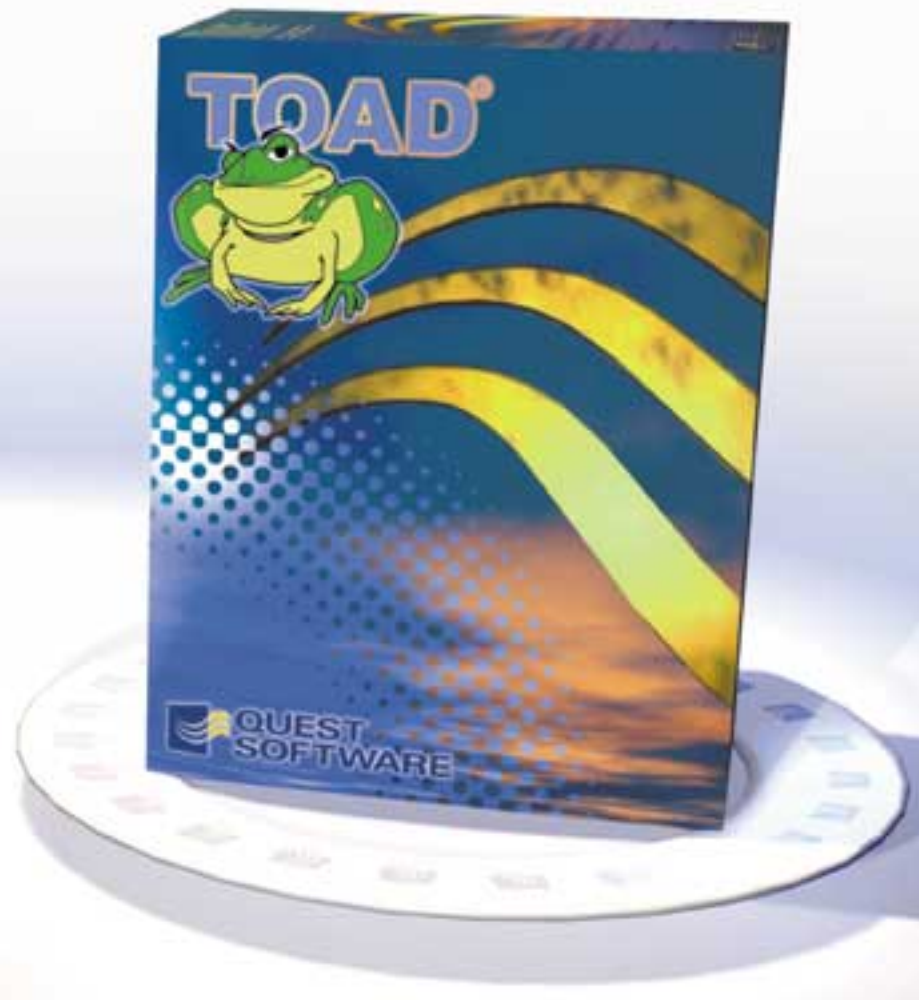
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UML World Courses Branch Out

BY CHRISTINA PURPI

With more than 50 classes in five different tracks, this year's UML World will include more tutorials and more vendors on an expanded Expo floor. The event, presented by CMP Media Inc.,

will take place from June 11 to June 14 at the Crowne Plaza Hotel in New York City.

Highlights of the conference will include keynote speeches by Extreme Programming guru Kent Beck and Doug Rosen-

berg, author and use-case expert. A panel discussion led by Richard Mark Soley, chairman and CEO of the Object Management Group Inc., will focus on the OMG's new direction toward supporting model-

driven architecture.

The five course tracks that will be offered are: Architecture, Patterns, Project Management, Software Process and UML.

The Architecture track will focus mainly on how to design an

overall development process, and will include individual topics such as "Modeling Components, Patterns and Frameworks with UML" and "Advanced Principles of OOD in UML." The Patterns track will focus on the reuse of tried-and-true experiences of other developers to gain efficiency and quicken development. Among the courses in this track are "Refactoring: Improving the Design of Existing Code" and "Templates, Patterns and Component Based Developments in Java with UML."

The Project Management track will teach managers to administer projects using UML. "Effective Habits of Successful Software Projects" and "Getting Value From UML Tools" are two of the several classes offered.

Software Process classes will explore methods to evaluate, measure and improve ways to accomplish engineering tasks. They include "Why Tasks Aren't Objects and How to Integrate Them in Your Design" and "XP Vs. RUP."

And finally, the UML track explores utilizing UML within the enterprise from the viewpoints of both project manager and developer, with courses titled "L is for Language" and "Sequenced Activity Diagrams." ■



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Monday-Thursday, 8:30 a.m.-8 p.m.

KEYNOTE SESSIONS:

Monday, 12:30 p.m.-1:30 p.m.
"Four Macro Trends in Software Development," Ivar Jacobson, co-developer of the UML and the Rational Unified Process

Tuesday, 8:30 a.m.-9:30 a.m.
"Fred Taylor, Making Software and Conversations," Kent Beck, well-known author of "Extreme Programming Explained" and "Planning Extreme Programming"

Wednesday, 8:30 a.m.-9:30 a.m.
"Alice In Use Case Land," Doug Rosenberg, founder and president of Iconix Software Engineering Inc.

SPECIAL EVENTS:

UML Expo:

Tuesday, Noon-2 p.m.; 5 p.m.-8 p.m.

Wednesday, Noon-2 p.m.; 5 p.m.-8 p.m.

Panel: Wednesday, 12:30 p.m.-1:30 p.m.

"What's the Story With XP and Use Cases?" Speakers include Roger Smith, Doug Rosenberg, Robert Martin and Martin Fowler

Panel: Thursday, 1:15 p.m.-2 p.m.

"A Conversation with Richard Soley: Model Driven Architectures and the Directions of OMG Standards"

Speakers include Richard Mark Soley, Cris Kobryn, Jishnu Mukerji and Sridhar Iyengar

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CodeTest 3.0 Rewritten in Java

Applied's suite gets new interface, trace tool, scripting

BY EDWARD J. CORREIA

Applied Microsystems Corp. has released CodeTest 3.0, the first major update to its suite of embedded system testing tools in more than two years. The suite has been completely rewritten in Java, and according to the company, now sports an improved interface, a new trace analyzer tool and can display multiple probes simultaneously.

According to James Bordyn, Applied's director of product marketing, CodeTest can now also address larger, more complex blocks of code. "We've increased the size of the code and memory pools we can cover

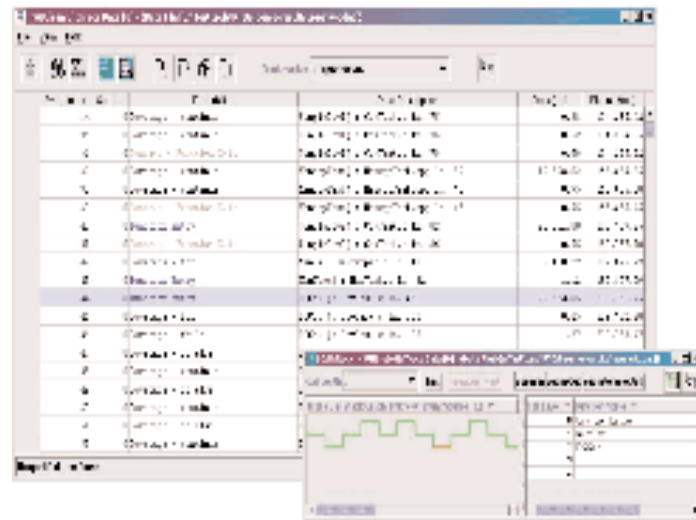
by about four times," he said, adding that the increases have been in direct response to the increase in complexity of embedded applications, particularly in telephony and networking applications where CodeTest is pervasive. The suite supports Enea Systems' OSE, QNX Neutrino, Sun's ChorusOS and Wind River's VxWorks, and is designed for Solaris and Windows hosts.

The newest component of the suite is the Trace Analyzer, which offers testers live views of application and operating-system code as it executes. According to the company (www.amc.com), the tool can display

synchronized trace details and call-stack and source-code information in separate windows, and offers advanced triggering, filter and search capabilities.

Bordyn said that another goal was to improve usability of the CodeTest Manager, the suite's main component. "Most of what we have done is in the user interface for ease of use and deployment, and to help developers run up against limits less," he said, referring to the increases in its analysis capacities.

The suite also includes a performance analyzer for examining timing specifications and discovering performance bottlenecks; a memory analyzer for identifying memory leaks and memory-related failures; and a code coverage tool, which is designed to exercise all of a system's code. In addition, CodeTest 3.0 now fea-



New Trace Analyzer presents live views of functions during execution.

tures remote target access, permitting multiple testers to access a single target over a network.

According to Jay Maggard, CodeTest product manager, also new to version 3.0 is the ability to add Python-based scripts for automating tests. The main benefit to this, Maggard said, is consistency of testing after code changes. "If you've created a test against a

golden code set and then you've made a change to that code, you want to make sure you retest in exactly the same way," he said, adding that scripting also helps save time by automating the process, rather than having to reinvent from scratch.

Available now, CodeTest 3.0 pricing begins at \$4,000 per module or \$12,000 for the entire suite. ■

ELC URGES STANDARDIZATION

BY EDWARD J. CORREIA

SAN FRANCISCO — The Embedded Linux Consortium is at a crossroads. Assembled just one year ago to help promote Linux as an embedded platform, its board has been grappling with the specter of fragmentation, which threatens to tear apart the fledgling market as it did with Unix years ago. To ward off the danger, the board has proposed a set of standards for Linux devices, but doing so spawns a new problem: how to handle the intellectual property that would result.

The proposal, which was presented at the ELC's annual meeting at the Embedded Systems Conference here in April, suggests a unified specification that would enable developers to rely on a minimum set of capabilities and APIs in any compliant embedded Linux device. Under the initial outline, the capabilities would be based on the union of several existing specifications, including those for real-time and file services.

According to the ELC's chairman, Inder Singh, who is also CEO of LynuxWorks Inc., setting standards would negate the requirement to develop separate ports for each Linux distribution, adding that such fragmentation, and the resulting loss of interoperability between versions, is "one of the greatest threats to

widespread embedded Linux."

The proposal suggests a third party be contracted to develop a compliance test suite, but leaves in question who should take possession of the resulting intellectual property; the ELC's bylaws expressly forbid the organization to create or distribute intellectual property. In a straw poll taken during the meeting, members voted almost unanimously in favor of the proposal to standardize, but were divided on other issues.

Standing alone in opposition to the motion to standardize was Kevin Dankwardt, president of K Computing Inc., a Unix and Linux training and consulting company, who said he would prefer to see more debate before such an undertaking. "Linux is more than an API, and we can't just put a stamp on it without good discussions."

The ELC (www.embedded-linux.org) also has established a working group to explore the adoption of a specification for a GUI layer.

Singh indicated a hope of releasing the so-called ELC Platform Specification within a few months and for the test suites and certification program to be in place within the next year. The ELC would make the suites available as open-source materials for self-testing as an alternative to official ELC endorsement and branding, according to the organization. ■



Standardization requires detailed discussions, says K Computing's Dankwardt.

Rational Tests in RealTime

BY EDWARD J. CORREIA

SAN FRANCISCO — Rational Software Inc. has released Test RealTime, a suite of tools that the company says includes the ability to use UML models to design system tests and view debug info. The announcement came at the Embedded Systems Conference here in April.

The announcement brings to market the fruits of Rational's March acquisition of Attol Testware, a company based in Toulouse, France, which had been developing test tools for real-time embedded systems.

The Test RealTime suite consists of five modules: a pair of new tools from Rational and three modules inherited from Attol. The parts from Attol are unit testing, for analysis of individual C and C++ functions and Ada embedded systems; system testing, for testing message-based system interfaces in C and C++; and Attol's code coverage tool for C, C++ and Ada.

Most notable are the Rational modules, consisting of an object testing module for automating object collaboration tests for C++; and Trace, a source-code instrumentation and analysis tool that creates on-the-fly sequence diagrams in standard UML. According to the company, Trace can display all the object calls

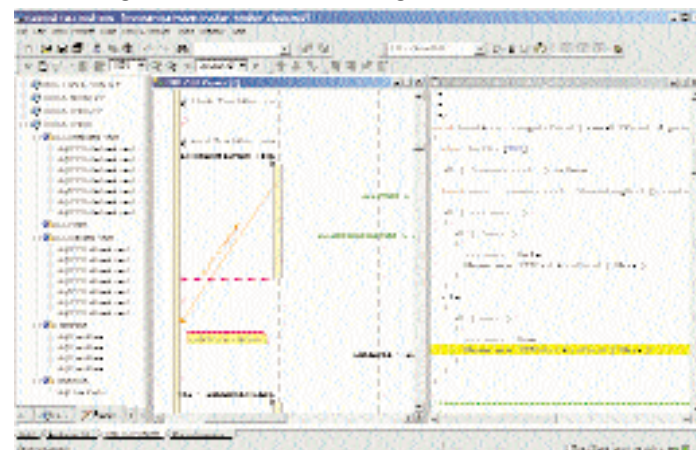
and method calls in a C or C++ embedded system while they are executing. If applications were originally created with UML, then Trace diagrams may be manipulated to correct coding errors, the company says.

According to Sam Guckenheimer, Rational's senior director of technology for automated testing, one of the main benefits of Test RealTime is the ability to create consistent tests. "UML can now be used to design tests as well as systems; that's an industry first. With Test RealTime, developers can deliver repeatable, measurable tests for embedded designs that include code coverage."

Rational also has introduced QualityArchitect RealTime, which integrates with Test Real-

Time and adds test automation capabilities to Rational's Rose RealTime, the company's UML design automation tool. Quality Architect RealTime is designed to test individual capsules and their integration within a Rose RealTime model, and works in both real and simulated environments.

Test RealTime and QualityArchitect RealTime are available now. Test RealTime for HP/UX, Linux, Solaris and Windows hosts sells for \$5,495 per node-locked host license, and \$9,625 per floating license. QualityArchitect RealTime is delivered as part of Rose RealTime Professional, which sells for \$7,495 per node-locked license and \$13,125 per floating license. ■



UML diagrams help testers to visualize and correct errors in the code.

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FPGA Advances Incite Talk of Adaptive Computing

BY EDWARD J. CORREIA

Now that we've reached the year 2001, perhaps it is fitting that computers begin to reprogram themselves. And while we haven't yet reached the level of the HAL 9000 from Arthur C. Clarke's prophetic science fiction novels, recent advances in technology have companies talking about an age of computers that can think for themselves and adapt to their environment and the needs of their users.

ANALYSIS

One such advance, at least in the embedded space, is the new mainstream support for field programmable gate arrays, or FPGAs, complex integrated circuits that can be dynamically reconfigured to adapt to a computer's processing needs.

And although the gate array is certainly not new, recent developments make them applicable for new uses. "It's only been in recent years that the sheer size of FPGAs has grown to where they can replace microprocessors. That's a trend that in the last couple of years has taken off very quickly," said David Pellerin, director of FPGA design products at Protel

International Ltd. (www.protel.com), maker of software for electronic design automation. Pellerin described using the cutting-edge technology to build "dynamically reconfigurable systems that swap in logic."

Gate arrays are chips that can be programmed to behave in designated ways. In their simplest form, they contain just a few gates and are mainly used as "glue logic" to connect multiple processors. The FPGAs of today can contain millions of gates, and have become so sophisticated that they can be programmed to act as single-core or multicore processors.

But that doesn't mean that FPGAs will become as ubiquitous as ordinary microprocessors, at least not any time soon. Gary Smith, chief analyst for design and engineering at the Gartner Group, equates using adaptive designs in embedded systems with corporate suicide. "There are some problems with adaptive computing, primarily with verification. It's one thing to do this on a PC, where if it crashes, you're already used to that. But if you start to use adaptive computing on real-time or time-critical systems,

you can get yourself into real trouble. Until we solve those problems, you're not going to see a lot of this stuff."

Pellerin agreed, referring to application development for these adaptive systems as a brave new world. "It's a research topic at this point that no company today has adequately addressed." He added that it is still unclear how applications and operating systems will interact and adapt to dynamic changes in hardware. "It really comes down to simulation," he said, "and the jury is still out on what role the operating system will play."

Jerry Fiddler, founder and chairman of embedded software giant Wind River Systems Inc., said that many development tools companies, including his own, have been caught off guard by advances in hardware such as those in FPGAs and programmable logic devices (PLDs). "Most of what we've done has relied on the PC changing slowly. Now the hardware is pulling the rug out from under us," he said.

What is lacking, Fiddler said,

is a cohesive set of tools for developing applications for such systems, many of which might consist of a CPU to handle the system's main processing tasks and an FPGA to handle the more complex computations. To

help fill the void, Wind River (www.windriver.com) announced an agreement with silicon programming tools company Celoxia Ltd. to distribute its DK1, a design suite that simplifies the programming of FPGAs with a C-like environment. FPGAs generally are programmed with variants of the hardware description language (HDL), a low-level programming language.

But programming the gate array is only part of the problem. According to Scott Taitel, CEO of Protel's Tasking Group, "There's a level of reconfigurability that happens in dynamic—or adaptive—computing. The first level is to customize your processor core. And that's all well and good, but without a compiler for that, it's useless." Tasking solves that problem with a configurable compiler



Without an adaptive compiler, custom cores are useless, says Protel's Taitel.

that adapts to changes in the core. Embedded development tools maker Tasking Inc. was acquired in April by Protel.

Protel's Pellerin said that Wind River is on the right track. "They're talking about the right things and they understand that convergence is happening, but they don't have all the tools," adding that a debugger that ties in with the core programming tools is critical. "Now that you have a custom processor that no one else has built, and more than likely you've got other logic on that FPGA that's unrelated to the processor core itself, you want to be able to simulate that before you create the FPGA." That's where the Tasking tools become useful, he said.

Tasking most recently unveiled its Multi-core Debug System, a tool based on its Cross-view Debugger that it claims will give developers the ability to build and debug systems atop multiple mixed processors and/or FPGA-based cores. And while it currently acts only on static cores, Pellerin sees it as a critical first step toward development for adaptive systems. ■

Varied Development Platforms Abound at ESC

BY EDWARD J. CORREIA

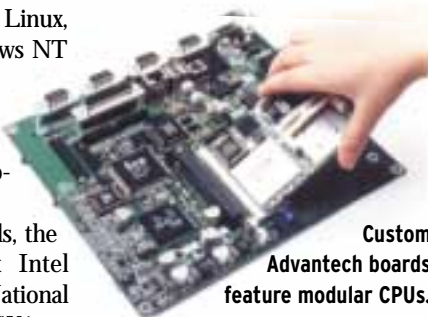
SAN FRANCISCO — Despite being only about six months from last year's Embedded Systems Conference, hardware vendors unveiled all manner of new development platforms that are sure to be of interest to enterprise developers.

Embedded hardware and software developer **Advantech Co. Ltd.** (www.advantech.com) introduced the System-on-Module (SOM), a series of embedded development systems for Linux, Windows CE and Windows NT Embedded that separate the CPU, supporting chip set and memory from peripheral development boards.

Available in two models, the SOM 144 will support Intel StrongARM SA-1110, National Semiconductor Geode GX1 or Transmeta Crusoe TM5400 processors. The SOM 144 includes an Award BIOS, EIDE hard-drive interface for two hard drives and 64MB RAM. The SOM

ETX is designed for the Intel Pentium III/Celeron or Geode GX1 processor.

The development board for the SOM 144 includes three PCI slots; VGA graphics with 4MB VRAM; Fast Ethernet and a wide selection of standard interfaces. The SOM ETX development board includes two PCI and two ISA bus slots, and includes interface connectors similar to the SOM 144; it does not include video or Ethernet



Custom Advantech boards feature modular CPUs.

circuits. Both boards take a Flex-ATX form factor and are built to order. Pricing starts at \$19,500 for either model, and includes three SOMs and three custom

development boards. The company is scheduled to begin shipping the boards in July.

Also producing a customizable board is **Zendex Corp.** (www.zendex.com) with its ZXEx86 Multifunction Board. Built around the ZF86 microprocessor from ZF Linux Devices, it supports as much as 256MB RAM and includes Linux. The standard board also includes diskette and IDE interfaces and PS/2 ports for mouse and keyboard. Aside from its included interfaces, the board is essentially a blank slate, with options for adding 1GB EPROM, Flash or RAM, and various peripherals.

According to Zendex, the ZXEx86 is designed to be customized quickly, usually within a few days. "One of the problems is that you can't seem to get custom boards fast enough," said Howard Czapl, CEO of Zendex. "We can build a custom board quickly. Then while developers are debugging, we can



Socketed development boards from Zendex can be custom-built in days.

build an optimized board for deployment." Pricing for the ZXEx86 starts at \$995.

Embedded Planet LLC (www.embeddedplanet.com) demonstrated VxWorks Planet, its hardware and software development kit for Wind River's RTOS. The kit is built around a Motorola PowerPC 860 and Epson SED 1386 graphics I/O module and includes a 6.5-inch touch-sensitive LCD screen.

According to the company, the VxWorks Planet kit includes all the necessary VxWorks drivers plus PlanetCore, the company's diagnostics software and system firmware. The PlanetCore bootloader permits devel-

opers to download new system images via serial or Ethernet connections. The tools integrate with Wind River's Tornado II IDE. Availability is scheduled for June, and pricing starts at \$4,495.

Motorola Inc.'s **Motorola Computer Group** (www.motorola.com/computer) demonstrated a Bluetooth-enabled single-board computer at the show, and has unveiled its embedded strategy to include the low-cost wireless technology in its PowerPC and Intel-based embedded infrastructure equipment running Linux, VxWorks and Windows 2000.

According to Jeff Harris, director of research and systems architecture, the move will open the door to companies wishing to enhance such stationary equipment as MRI machines, desktop printers and copiers. Motorola is scheduled to begin shipping Bluetooth-enabled hardware platforms in early 2002. ■

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additional middleware and plug-ins, the company said.

According to Mike Finckh, Tuxia's managing director, all enterprise customers have at one time or another asked the same question: How do I embed

Linux? "That's where we come in. We let them concentrate on their solution," he said. But Tuxia's big advantage over other versions of embedded Linux, he noted, is availability of all Linux features. "What they're doing is stripping [Linux] down, while we compress the full Linux desktop," he said, adding that

TASTE-based terminals also are field upgradable. Prices are disclosed only to customers.

NextNine Inc. (www.nextnine.com) hopes to improve device uptime with NextNine R&D, a diagnostic tool that the company claims can display device health data in real time throughout its development

cycle and after deployment, even if the device is not always connected to a network.

The server-based system relies on agents running on the device that deliver information to the server about its environment and activities. Oren Minzer, NextNine's vice president of industry marketing, said that one

of the main advantages of R&D is its ability to move beyond the development lab. "It is intended to capture the behavior of embedded hardware in its natural space," he said, something that no lab can truly simulate.

Julia Miller, NextNine's marketing manager, said R&D holds real benefits for the enterprise developer. "After deploying R&D in an enterprise, the IT department can take over the supporting devices using the very same tools that the developers used," providing a seamless support experience, she said. NextNine R&D is priced at \$150,000 for five developer seats and is scheduled to begin shipping in August.

RidgeRun Inc. (www.ridgerun.com), which is focused solely on developing solutions for DSP-based devices running Linux, in March introduced DSPLinux, a Linux-based software platform that runs on a digital signal processor from Texas Instruments Inc. At the show, RidgeRun was demonstrating the software for the first time running on a TMS 320DSC21 DSP and a TI DSC21-based digital camera development system running DSPLinux.

TI's DSC family of processors combines a DSP with an ARM 7 processor core in a single chip. According to the company, the DSPLinux kernel runs on the ARM and real-time tasks run in the DSP through a bridge interface. This configuration is well suited to high-speed embedded applications such as streaming media devices, digital video recorders and other imaging products, the company said.

Included in the SDK is an appliance simulator, which saves time by permitting application and driver developers to work in parallel in the absence of hardware, the company said. The simulator provides an on-screen representation of an embedded device running DSPLinux, complete with video display and controls. According to Tom Parks, RidgeRun's director of marketing, the simulator also can be used by beta users as a tool for application testing. In addition, the SDK includes multimedia acceleration, memory compression and power-management tools. The beta is available now for free download at www.dsplinux.net for Red Hat 6.2 hosts. DSPLinux will be priced at \$5,000 per concurrent user, and is scheduled for release at the end of June. ■

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Universal Plug and Play and a new set of USB driver classes will be introduced to Windows CE, as well as embracing the Bluetooth specification for short-range radio frequency communications. According to Megan

Kidd, product manager of Microsoft's Embedded and Appliance Platforms Group, Bluetooth-enabled handheld computers will include "media sense," a feature that "will inform me of connectivity options as I walk through an office," she said.

Strangely, Microsoft has not announced plans to incorporate

Bluetooth in its desktop or server operating systems, leaving developers building Talisker-based devices to fend for themselves or select third-party solutions to give their applications a connecting point. Kidd suggested that this void might be filled, at least in part, by adding wireless Ethernet to the handheld device.

But gaps in the offerings of one company can mean opportunities for another. "It does create a void on the desktop that we're more than willing to fill," said Ken Ebert, founder and director of engineering at Rap-pore Technologies Inc., which develops Bluetooth and related wireless software for desktop

and embedded systems.

Sinead O'Donovan, lead product manager for Microsoft's networking communications for the Windows CE Group, said that once Bluetooth is added to Windows CE, developers can begin building dedicated Bluetooth connecting point devices based on Windows CE and will not need to rely on other Windows operating systems. But Ebert said that Windows CE is less suited for those applications than other operating systems. "If you want to do a pure embedded play like an access point, we view Linux as a stronger offering."

Microsoft also announced that it has added 18 new board support packages to Windows CE 3.0, bringing the total to 20, and will now offer systems integrators increased access to operating-system source code. Kidd said that by increasing access to Windows CE source code, developers can more easily develop and debug applications and shorten development time, which she said currently averages 12 to 18 months. Changes to source code are allowed for testing purposes, she added, but not for deployment.

Talisker is scheduled to progress to phase 2 beta in the third quarter of this year and to be released by year's end, Kidd said. Pricing was not announced. ■

Score One For Integration

With the goal of creating an environment in which developers using different languages can contribute to the same project, embedded tools maker DDC-I Inc. has released SCORE, short for the Safety-Critical Object-oriented Real-time Embedded suite.

According to the company (www.ddci.com), SCORE permits developers using any combination of C, Ada or assembly languages to contribute to the same application with support for Win32 and OSF/Motif GUIs. A proprietary technology called Architecture Neutral Distribution Format generates intermediate code prior to final compilation. Supported targets are 486, Pentium, PowerPC and SPARC, with 68000, Alpha, HP-PA, JVM, MIPS and RS/6000 planned. C++ and Java language support also are planned for the future.

—Edward J. Correia



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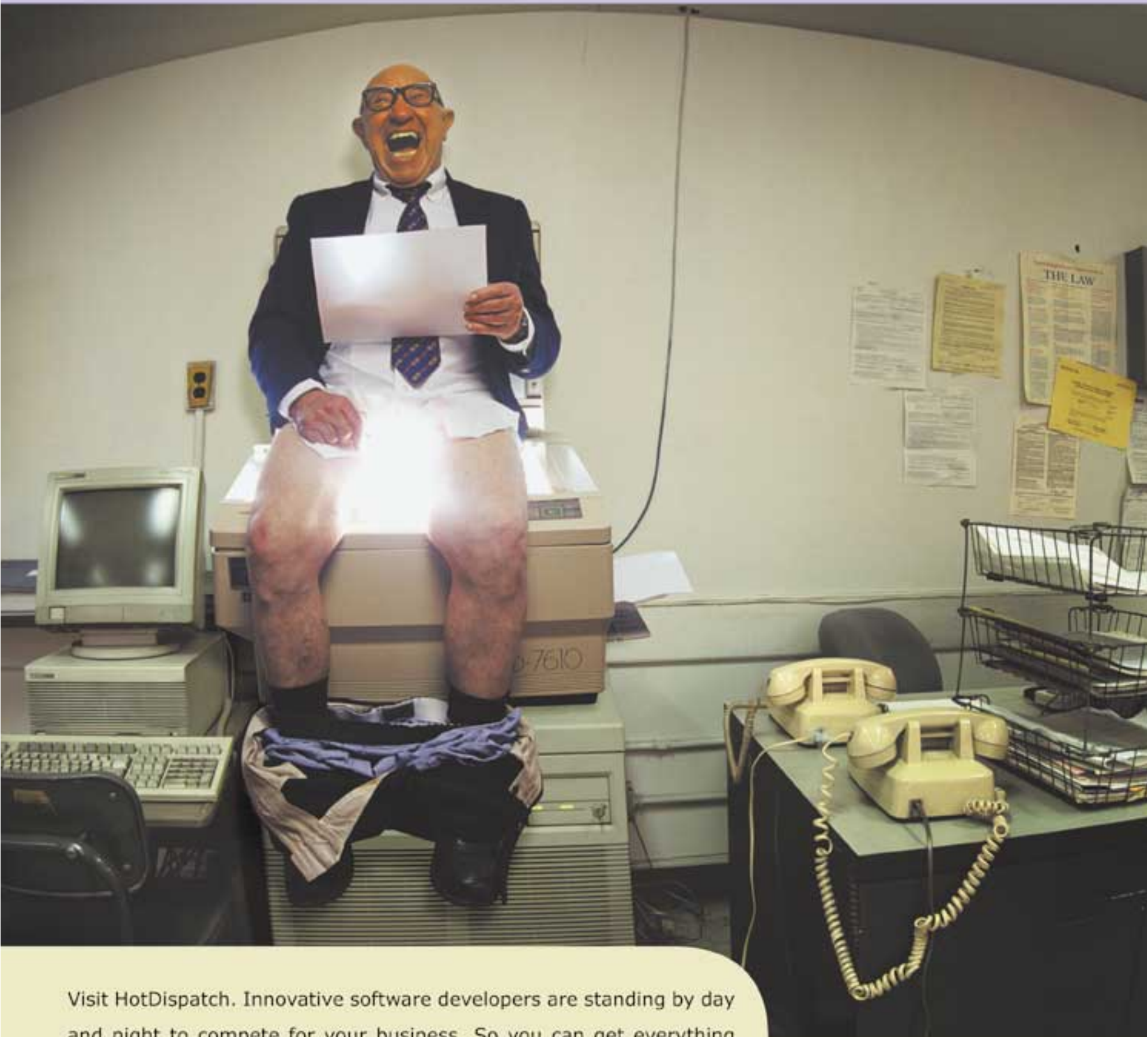
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Will Kylix Open The Floodgates?

BY ALYSON BEHR



Until recently, a Catch-22 situation existed between tool vendors and enterprise developers. Developers said they couldn't run Linux on their desktop because the editors, modelers and IDEs (integrated development environments) that were available to them were not of the same quality as those that were available for Windows and Unix. Vendors were reluctant to allocate resources toward developing products that might not yield sufficient revenue due to a lack of developer demand.

A few recent developments suggest that a solution to the conundrum may

be close at hand. IDC just completed a privately sponsored study on Linux penetration that revealed Linux on the server was far more pervasive than originally estimated. Just as Linux crept in the back door on the server side to earn respectability, this pervasiveness, along with Borland's recent release of the long-awaited Kylix rapid application development toolkit for Linux, may open yet another door to the developer desktop in the not-too-distant future. IDC research director Rikki Kirzner noted, "It's being used by developers everywhere. Almost every enterprise we interviewed has a large percentage of

developers who actually work on Linux. They develop the applications on a Linux system and then deploy them onto another targeted operating system," Kirzner said. "We have seen very few client-side Linux applications and very little demand for client-side products, but of course everyone promises to support the demand if they see it." Predictably, reaction to the Kylix release and its importance is mixed.

C3 Technologies Inc. is a software development consulting company that primarily writes line-of-business and database applications for vertical markets. It uses mostly Borland products, although in some cases its developers will use Microsoft tools. Steven Dente, president of C3, said that before the company adopted Kylix it used several tools, including Metrowerks' CodeWarrior, to accomplish the majority of its work. Dente said C3 will continue to write low-level applications such as device drivers with CodeWarrior.

Kylix is really Delphi ported to Linux. "I like the same things about Kylix that I like about Delphi, namely very high productivity and a super-strong IDE and debugger," Dente said. "There's been a shift in paradigms. When Windows first came out, you were stuck writing in C and calling all the APIs directly. Productivity writing for Windows was very low, and that's what it was like developing with existing Linux tools. Now that Kylix is out, it's sort of like the increase in productivity you got when VB first got started and Delphi came out. With Kylix, we have all the benefits of a true RAD environment."

The temptation is to directly compare Kylix to Delphi because it is the mirror image of the IDE, but Dente said that would be a mistake. "It's missing a lot of the extra components that Del-

phi—being a more mature product—has, such as multimedia tools and strong printing and reporting functions," Dente said, "but its core set of tools are certainly enough to give you very strong GUI development capabilities."

Other vendors of commercial-grade tools, such as IBM Corp., Sun Microsystems Inc. and WebGain Inc., have distinctly different positions when it comes down to actual support for Linux on the desktop and Kylix's potential impact. WebGain, manufacturer of the Studio 4.1 suite of tools that includes VisualCafé among other licensed or acquired products, is focusing on tools that facilitate enterprise and team development. "WebGain really is focused primarily on the enterprise," said Ted Farrell, WebGain's CTO. "The majority of developers we run into in the enterprise have been Win32-based. We do see Solaris as a viable enterprise choice, so we've also developed our

products for that market. We haven't necessarily run into a lot of Linux in the enterprise, but it has a pretty good following as far as individual developers or collaborative open-source projects. What we're seeing are companies standardizing on a particular platform and a particular set of products from a particular company to reduce IT costs. It would make sense for us moving forward to support the platforms we see

playing in the enterprise space." In Farrell's opinion, the real driving factor for all consolidation is IT costs.

With Solaris running second as the platform of choice for developers, it's no surprise that Drew Engstrom, Sun's product line manager for Forte tools, claimed, "Our deal on platforms is that Forte for Java is written in Java from the ground up based on NetBeans, requires

NOT JUST TALK

Scott Hebner, IBM Corp.



"In 1989 when I joined IBM, I remember us saying that over our dead bodies would TCP/IP become a network standard," joked Scott Hebner, director of marketing for WebSphere. Hebner is a strong advocate of the perpetuation of Linux. "Talk is cheap. We're not just talking about Linux; we're actually putting real products out there."

SD Times: Please speak to IBM's support of Linux in the development environment.

Scott Hebner: We're putting pretty much our entire middleware and application development portfolio across Linux. Where we're headed with all of this is you're going to see an even greater level of integration and greater commitment in the development environment. You're going to see us doing a lot more in terms of an optimized portfolio of tools for Linux that are more natively integrated.

Do you see a trend toward development on top of Linux?

What we're seeing today, in general, is that people who are deploying Linux applications are developing on non-

Linux clients; however, we see not only an opportunity there but a trend that, over time, Linux developers are going to develop on Linux. We're certainly going to be there to provide our customers with whatever choices they make in terms of what they want to develop.

What's your time frame?

I think you'll see a progressive set of capabilities as we move from 2001 into 2002 that'll become very strong. It's interesting—we see three tiers of openness occurring. If you think about it, we've just been through a transition over the last five or six years where the actual platform that you build to has been highly proprietary and operating system-centric to a much more open and Internet-centric platform. Web application servers have become pretty much the platform that developers build to, not an operating system.

Microsoft might take issue with that.

They would take issue with the world becoming open, right? Without going

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WebGain hasn't run into a lot of Linux in the enterprise, says Farrell.

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FLOODGATES

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only a Java Virtual Machine and is platform independent. So, from the beginning we've been platform agnostic in terms of supporting Microsoft, Linux and Solaris." Forte's support for Linux would appear to be important

from a political standpoint with regard to community responsiveness. According to Engstrom, "It's a fairly natural affinity for us given the open-source heritage of NetBeans. There's a crossover between the Linux community using NetBeans. We've found that as we've branded that in the com-

mercial world, there may not be as many Linux developers, but it's a pretty important message for people buying our products that we support multiple platforms. They may not be developing on Linux yet in the corporate space, but I think we're beginning to see that take hold through the back door."

Linux's challenges are similar to the challenges Engstrom said Solaris faced out of the gate since they are both open platforms. "There's still some [concern] around open-source software with quality, viability, scalability and security. We've also had to deal with that. We have the same job in essence

that Linux developers have, that is convincing the enterprise that it is okay to develop on top of open source—that evolution happens quickly." Kylix's evolution doesn't appear to have phased Sun. Engstrom acknowledged that he wasn't very familiar with it and that he'd spent more time tracking JBuilder, and he indicated that he doesn't believe Kylix will have any significant effect on Sun's plans for Forte.

One major vendor that believes in the evolution of Linux and has allocated significant effort toward support of Linux both on the server and the desktop is IBM. According to Scott Hebner, director of marketing for WebSphere products, "Linux is a rather major part of our overall strategy, not only on our server side, but if you look at it from a software group perspective, we're putting pretty much the entire middleware and application portfolio across Linux." Of the Kylix release, Hebner said, "We watch it as a point player but not as a major competitor...our customers are looking for a complete AD environment...what Borland did is more of just a tools play."

Whether Linux is ready to make the play to the enterprise developer desktop, either as a result of Kylix's arrival on the scene or simply on its own merit, clearly depends on whom you talk to. C3's Dente said, "Whenever we have Linux running, it's a dual boot system with Windows. We don't have anybody who's running strictly on Linux, primarily because the tools aren't there. Of course that's what the Kylix vision is about, but at the present time I don't see that as a reality." On the other hand, Dente added, "we're finding a lot of interest in Linux applications in single-use desktop applications, such as point of sale and warehouse, where a terminal is dedicated to a single purpose. There's a ton of advantage to using Linux in that environment." IDC's Kirzner agreed, saying, "At this point there is a lot of interest on the server side—a lot more people than we ever anticipated. I would say that if you had first-class applications and controls to develop Linux applications, you might see the demand, but it's a case of the chicken versus the egg. With Kylix, the opportunity certainly becomes more viable." ■



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TALK

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after Microsoft, obviously they're moving in that open direction, too, because they see that these developers are increasingly not developing to Windows. It's very clear; they know that. Back in the '60s and '70s, you wrote applications that were defined by the hardware environment. In the '80s and early '90s, with the whole client/server shift, the operating system defined how an application was built and where it would run; namely Windows with an 80 percent or greater market share. Now the Internet is the platform that developers are developing to, with the Internet being a nice fancy word for open standards. Five years ago, we would never have thought that Windows would not be the standard graphically as the interface for a business application. But today it's absolutely, clearly not; it's HTML.

With the application server and operating system becoming more open, don't application development tools need to follow suit?

While both of those have become more open, what has not occurred yet is the openness from an application workbench perspective. So even if you have a Linux server and an open application server based on open Internet standards like Java 2EE and XML, developers today would still have to choose proprietary tool environments. IBM's strategy is going to open up the tool environment also.

Do you see a compelling business case for running Linux on the developer desktop?

Look at Apache and Tomcat and Linux—just those together. There's a huge degree of movement to that environment. Yes, I agree that it's largely a deployment statement, but the natural tendency over the last 30 years is that while there's first a focus on deployment, it always evolves back to including development. If the market moves to building to these open-source environments, they're eventually going to develop on them, too. I think the business case is very clear. It won't be long from now when Linux and Apache are just the de facto standard of what people go to. It may take three to five years, but it will happen.

What are the biggest hurdles Linux must clear to get to that point?

Maturity of the software that exploits it. What I mean by that is customers that are building

business applications need to have the mature middleware, software applications, support and services. Linux is only in its third or fourth year of being a commercial entity, so it's young in its life cycle.

Is there a killer app that might spur growth onto the desktop?

I'm not sure if it's a killer

application, but if you start to see an open workbench or application development environment that's the equivalent to Apache in the server world, where you're able to plug in and stop worrying about source code and all these different IDEs and you build on a common workbench, it'll be a start.

Think about the basic open premise of an open server environment; the next logical step is to not lock yourself into a proprietary tools environment.

Has Borland's release of Kylix changed any of your product strategies?

We watch it as a point player but not as a major competitor.

What's happening with the application development environment is an increasing mix of the server, middleware and tools, so our customers are looking for a complete AD environment. It used to be just the tools. What Borland did is more of just a tools play.

—Alyson Behr

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EDITORIALS

Ready to Exhale

It seemed that for most of 1999 and 2000, a good portion of the Linux community was holding its breath. The reason: Kylix. If any company could inspire the masses of developers to adopt high-quality tools, it would be Borland, which despite its ill-fated attempt to rebrand itself as the "inside the enterprise" software company, still commanded exceptional loyalty from programmers and managers alike.

That was then; this is now: Inprise is Borland again, and Kylix has been shipping for several months. Yet no flood of new Linux applications has followed in Kylix's wake. Yes, many developers are using the new IDE. But many are not: gcc and gdb take care of low-level C++ developers' needs, and many new enterprise apps are built in Java.

The Linux market needs more than good Linux app development tools. What it needs now, from the enterprise perspective at least, is increased demand for the tools that exist. With its flurry of .NET announcements, Microsoft Corp. has achieved momentum and increased mind share, while the Linux vendor community seems disorganized and rudderless in the wake of their share-price collapses.

Many Linux advocates have blamed the operating system's slow expansion beyond the basic application and Web-server space on the lack of commercial-grade integrated development environments. Now that professional-grade tools are available, from Borland as well as other companies, that excuse can no longer be accepted.

What Was IBM Thinking?

We've heard the official explanation: It wants to make better inroads in the Unix and Windows database market and coveted a 100,000-user customer base. But that doesn't adequately explain IBM Corp.'s late-April acquisition of Informix Corp.'s database assets for a cool billion dollars in cash.

Informix lacked the resources to diversify while competing against database heavyweights IBM, Microsoft, Oracle and Sybase, while also moving into the applications space. Thus, the company split last year into two separate companies: the database company, which sold plumbing; and the applications company, which sold information-management solutions based on those databases. The sale of the database company is a logical extension of that strategy.

But what has IBM bought for its billion dollars, plus who-knows-how-many millions of dollars of integration and merger costs? The argument that Informix's databases fill a gaping hole in IBM's product line doesn't hold water, considering that IBM already has two industrial-strength databases: DB2 and IMS. Did IBM management forget that DB2 Universal Database already runs on AIX, HP-UX, Linux, Solaris and Windows? It seems that they did.

The search for the real answer goes deeper. Perhaps this is a pre-emptive play—buying Informix's database technology before a competitor like BEA Systems Inc. or even Sun Microsystems Inc. could snap up those assets. Maybe IBM thinks that it can migrate Informix's Foundation.2000 customers to DB2...or migrate DB2 customers to Foundation.2000. (We don't think so.)

The only question left is, how long before IBM buys the remaining portion of Informix, now called Ascential Software? Perhaps that's the real prize that IBM is after. ■

GUEST VIEW

THE MUSTARD AFTER THE DINNER

In Poland we have an interesting expression: "It's like getting mustard after dinner." In other words, "too little, too late." I believe that in the technology world, Java is dinner and C# is the mustard after the dinner.

Developers frequently move from one language to another when they see some clear, definite advantage to doing so. When C++ came about, people moved from C to C++. When Visual Basic and Java were created, C++ developers migrated to both languages. As Java increased in popularity and Visual Basic developers realized that Java developers were more highly regarded by the development community and the job market, a significant number of Visual Basic developers started to move to Java.

One of the main reasons that Java is now so popular is its relative ease of use. While Java is slightly more difficult to master than Visual Basic, it is much less difficult to use than C++. C++ is extremely powerful, but its power can make the language so difficult that few developers can take advantage of all that it offers.

This trend of both C++ and Visual Basic developers moving to Java presented Microsoft with a challenge: how to preserve the developer's community that has been the basis of their success with applications. Microsoft's manner of dealing with developers has always been one of their greatest strengths and assets; they are dedicated to keeping the community together and fueling them forward with new technologies. Developers have grown to appreciate and expect this support, and they have shown their appreciation by making Windows the most popular platform for PCs. Because sustaining this development community has been so critical to Microsoft's success, the company had to do something to continue providing for the development community and to prevent Visual Basic developers from moving to Java (and away from Microsoft).

One possible solution could have been to embrace Java. However, this was not a viable option for several reasons: Microsoft and Sun disagreed

over Java implementation and compatibility issues. Microsoft was troubled by the Java platform's ability to operate independently of any operating system. The Java community excluded Microsoft from the development of Java.

So basically, Microsoft was not really in the position to embrace Java. Instead, they chose to respond to their dilemma by developing the .NET platform and the C# language tied to it. However, when you take a technical look at C#, it doesn't seem as though this response will be an adequate solution to their problem.

C# might sound good in principle, but it really doesn't bring many new technical features or significant advantages to the development community. C#'s main advantages over C++ are threefold: Garbage collection relieves developers from having to perform manual memory management; variables are automatically initialized; and variables are type-safe.

These are helpful improvements over C++, but they are the same improvements that Java makes. This raises the following question: "Where is the advantage of C#?"

We have heard several answers to this question.

Version support: One possible advantage of C# is that it contains built-in version support. However, I fear that this feature can actually be a disadvantage: It might give people a false sense of security and possibly discourage them from using source-code repositories.

C# objects' support for COM: C# objects will reportedly support COM. But is this support reason enough to move to a new language? I don't think so. First of all, COM is limited because it is Microsoft-specific. Second, the COM technology is currently undergoing a lot of change and reorganization. At this point, we cannot be certain what COM will look like in the future, or if COM will even be around then. So why make the effort to change languages for increased COM support?

Speed: C# is supposedly faster than Java, but Java is becoming faster and faster as the development community contin-

ues to improve Java compilers and Java Virtual Machines. Even if C# is faster, will this increased speed really make a noticeable difference in application performance? Probably not. C# is designed to be used for building business logic for servers. When you're working with servers, language speed is not critical to performance; network speed and connections to other systems are the main things that affect the speed of these applications. Besides, if you were in a situation where the language speed was critical, you would want to use C or C++, not Java or C#.

In other words, based on what I've seen and heard so far, it doesn't look like there is any real reason to move from Java to C#.

If C# had been introduced before Java, we would really love it. But because it was introduced after Java had already taken hold of the development community, C# looks like the mustard after the dinner, which can actually spoil the dinner's taste. I doubt that Java developers will see enough benefit in C# to make the transition from platform-independent Java to Microsoft-centric C#.

The real question now is whether or not C# will be able to stop Visual Basic developers from moving to Java. If so, I believe its success will owe more to Microsoft's marketing expertise than to features inherent in the new language itself. ■

Adam Kolawa is chairman and CEO of ParaSoft Corp. Reach him at ak@parasoft.com.

CLARIFICATION

The licensing fee for Jcorporate Ltd.'s Espresso Framework version 3.0 open-source framework is free. Support is optional and costs \$999. This information was not clear in a story in the April 15 edition ("Espresso Framework 3.0 Cleans Up Java Packages," page 1).

WHAT DO YOU THINK?

SD Times welcomes feedback. Letters must include the writer's name, company affiliation and contact information. Letters become the property of BZ Media and may be edited for space and style.

Send your thoughts to letters@bzmedia.com, or fax to 516-922-1822. Please mark all correspondence as Letters to the Editor.



ADAM KOLAWA

SAVING MICROSOFT

At press time, Microsoft stock was trading at about \$60 per share—more than 25 percent off its 52-week high of \$82. That's a quarter of the value of the world's leading closed-source software company evaporated into thin air. That's intolerable. I feel awful for Bill Gates, Steve Ballmer, Rick Belluzzo, Jim Allchin and the rest of the guys. You know their personal portfolios are in the dumpster. It's a crying shame.

That's why I've spent the past month formulating a new business model for Microsoft—a sure-fire way to reduce expenses, build market share and enhance the bottom line. The ideal solution to Microsoft's ills.

And I am such a magnanimous fellow, I am not even looking for a piece of the action. Not a percentage, not a penny. Nada. Zilch. I offer this new business strategy entirely gratis. That's just the kind of guy I am.

Ever since Spring Comdex 1997, every trade-show attendee lucky enough to hear a keynote address from a Microsoft executive has heard the same astonishing statistic. Microsoft says it is investing \$1 billion per year on research and development for its Windows NT product family.

That's a gigabuck before you get to the costs of production code, debugging, maintenance, manufacturing, documentation, marketing, advertising, launch parties, distribution, sales, overhead and Belluzzo's new PowerPoint slides.

If you figure that two-thirds of Microsoft's \$9.38 billion in Windows revenues comes from the high-volume consumer product line—Windows 98 and Me, the cash cows—that leaves just \$3.1 billion in annual Windows NT revenues. With a billion dollars off the top for R&D!

Sure, the operating system is gaining market share. Analysts love Windows 2000, and beta testers are drooling over Windows XP. But Microsoft can't be making any money on it. The volume simply isn't there to justify a \$1 billion annual investment in R&D. It's no wonder the stock is down.

What Microsoft needs is a way to continue expanding its business in the server operating system market while reducing its costs. And that is precisely the solution I have to offer.

Give up? Lean close and I'll whisper: Linux.

Yup. That's right. Microsoft needs to bring out a Linux distribution of its own. It's the ideal way to slash expenses and boost profitability.

I figure Microsoft already has Windows NT. So it should call its new server operating system Linux NT. That'll keep it all in the family.

Instead of a \$1 billion annual investment in R&D, Microsoft can hire a couple of guys to write install scripts and keep up with patches on the

newsgroups. I figure that'll save 'em more than \$999 million right there.

Of course, Linux isn't free. There must be incremental costs associated with the introduction of a new product. You need office space for the staff, promotional T-shirts, new pages on the Web site and a complete market analysis from the wizards at the PR firm. I guess the cost of adding a new-but-related product to the line

must be \$5 million to \$10 million in a normal company. So let's say it'll cost Microsoft \$50 million to \$100 million in one-time expenses the year it launches Linux NT. So what? They're still \$900 million ahead.

How does Linux NT (see how natural it looks in print?) make such a difference to the bottom line? Simple: The R&D cost is shifted away from Microsoft's internal labs to a distributed team of Linux hackers located around the world. All of them slaving away at the hard problems and none of them charging Microsoft a dime. Brilliant, isn't it?

With a \$900 million cushion, Microsoft can afford to drop the price of the software. That's the tricky thing about Linux—technically, open-source software has to be free. But you can charge for the CD, the box, the manual, the install program, miscellaneous utilities and the Microsoft logo. Prices of \$99 to \$599 aren't uncommon in the Linux market—you can build a business on that. Especially if

you tack on the cost of an annual subscription to MSN.

And, of course, Microsoft can launch a conference, spin out a line of Microsoft Press books, partner with a magazine publisher—sop up all that ancillary-products gravy. Not to mention the consulting and training services. In fact, Microsoft can expand all of its services to a new audience of open-source hackers.

"But wait," you say. "Microsoft will never go for that." It's true. Some members of the team do seem unaccountably attached to the Windows NT code base. No problem! Microsoft can continue producing and selling Windows NT/2000/XP. They just need to name it Linux NT Pro. Every Linux vendor has a high-priced, high-performance option for customers who need it. That's where the bucks are, my friend! And there's no need to reveal the source code. Microsoft can even keep some of the R&D guys on the payroll beefing up Windows NT's POSIX interface to make it fully compliant with the open standards the company can now, for the first time, fully embrace.

Let's face it. Windows NT is an expensive dud. Microsoft should jump onto the open-source bandwagon with both feet. The stockholders will be dancing in the streets. ■

J.D. Hildebrand is the former editor of such publications as Computer Language, Unix Review and Windows Tech Journal. Reach him at jdh@sdtimes.com.



J.D. HILDEBRAND

AND ANOTHER THING...

TOO MUCH OF A GOOD THING

I'm sitting in O'Hare watching the delay board spin the magic wheel of chance again. Will my flight back to New York depart at 8:45, 10:05, 11:30 or not at all? It's been a pinball week, trying to stay abreast of the industry by going to the largest XML, Software Development and Embedded Systems conferences all scheduled for the same four-day period in early April. Jet-setting newspaper publishers can visit the three events briefly, but if you are a development manager, the superimposition of three im-

portant events represents a more serious challenge.

Conferences can be the best way to bring out-of-the-box thinking back into your

beyond-deadline projects, and add to the world view of your team. Buffet-style intensive training is often a great bargain. Exposure to development masters and gurus can reinspire the team. And for development managers, a strong unified industry conference and trade show can give one a visceral sense of how markets are evolving, which

can be critical in deciding when to switch development platforms, methodologies or vendors. Plus, you can engage your major tool vendors and their competitors in a hands-on shootout that is all but impossible through print and electronic media.

Trade show and conference producers are falling all over each other trying to serve growing new technology areas like Java and XML, but it's become too much of a good thing.

If you have been wondering which conferences to go to, it isn't an easy choice. Do you send your developers to the best in-depth XML conference, or let them take the XML classes at



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NOT WELL AT NOVELL

In my Jan. 15 column ("Special Achievement Awards," page 29), I presented my version of high-tech's Dubious Achievement Awards. At the time, I presented the Wish I Had a Vision Award to Novell's then-CEO, Eric Schmidt. In the write-up, I acknowledged the sad irony that the previous winner was Schmidt's predecessor at Novell, Bob Frankenberg.

Not surprisingly, both men cut similar profiles. They are both engineers and heavily technology oriented. Neither had serious business experience before becoming CEO. Both came over after long careers with Silicon Valley powerhouses (Frankenberg from Hewlett-Packard, Schmidt from Sun). Neither one articulated a vision for Novell when they were brought onboard, although both acknowledged that their company was in dire straits.

To this list, we can now add: Both left the company in worse shape than they found it. Perhaps more accurately, neither one did anything important to bolster the company. In both cases, the lost time hurt Novell badly—thereby worsening its market position.

Interestingly, Schmidt has not completely left Novell. He remains chairman of the board. This is not a good thing. For if the last two Novell CEOs can win the

same award for lack of vision, isn't the real culprit here the Novell board of directors? What it failed to grasp was Novell did not need an engineer at the helm; it needed a businessman. But, with Schmidt heading up the board, it's unclear whether board members will suddenly see the red light they missed the last two times through the intersection. And will a new CEO receive the support from a board headed by the less-than-successful former CEO?

You may not have noted that earlier this year, Novell agreed to acquire Cambridge Technology Partners (CATP) for \$250 million. The motivation behind the move was Novell's concern that major corporations wouldn't buy its good technology because IT consultants (read: the Big Five consulting firms) were all recommending Microsoft or Unix products. Obviously, by buying its own consulting firm, Novell would have legions of brainy hirelings who could spread the Provo gospel.

In a roundabout way, this is an admission that Novell has done a poor job marketing its own technology. Certainly we would expect that if the same quarter-of-a-billion dollars had been spent on marketing, these past few years would have

produced far better results than those we can extrapolate for the CATP acquisition.

Consider that CATP was relatively inexpensive because its stock had recently tanked to less than \$3 per share. This valuation is attributable to the company's first yearly loss since its founding in 1991. The loss should not be attributed to the crash of the e-economy during 2000: CATP was showing signs of distress *before* the collapse. Its 1999 net profit of \$2.1 million was its lowest since its founding—down from the previous year's net of \$58 million. At the time, the downdraft was attributed to the costs of moving into e-services consulting. Predictably, the 2000 loss was attributed to the costs of getting out of the same.

None of this inspires confidence and, to my eye, finds no parallel in Hewlett-Packard's sensibly aborted acquisition of Price-waterhouseCoopers' consulting practice. CATP was a company in distress bought by a company in distress. So, where is the synergy? Don't ask me; I don't see any.

The story doesn't improve if you look at the move from the customer side. CATP is unlikely to attract customers on the basis of its Novell affiliation. Well, it might attract *existing* Novell shops, but this will be at the cost of other customers who don't want a bunch of consultants who will parrot the Novell company line.

This plan does not show how the new company can attract customers outside of the two existing customer pools. This is the critical question and the one that Novell has yet to answer. Schmidt won't have to do this, because CATP's CEO, Jack Messman, will now serve as the CEO of Novell. Should this inspire confidence?

On the one hand, Messman has an MBA and is a businessman by profession. This is the good news. However, he was brought in to CATP in July 1999 to turn the company around. Instead the decline accelerated. Moreover, Messman's roots at the old Novell are long and deep. He was the CEO from 1982 to 1983, before the company really took off under Ray Noorda. Moreover, he has been on Novell's board since his tenure as CEO, meaning he figured in the choices of Frankenberg and Schmidt and did nothing when Novell's ship repeatedly ran aground. Could these failures have sobered him? Nah.

When asked by The Industry Standard, "Who is the most powerful behind-the-scenes person in the Internet industry today?" Messman answered, "Eric Schmidt, CEO of Novell."

From which I conclude, we should not expect things to improve. ■

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MIDDLEWARE WATCH



ANDREW BINSTOCK



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THE YEAR IN PREVIEW

I've never been a part of a secret society before, so when fellow columnist J.D. Hildebrand invited me to attend the annual meeting of the Software Development Parliament of Ubiquitous Newspersons, Didacts, Intellectuals and Teachers (SD PUNDIT), I was naturally flattered. "It's always fun," he said. "We figure out the upcoming year's spins, divvy up the technical subjects, come up with the 'secret true meanings' of acronyms, stuff like that." I must have looked uncertain because J.D. quickly added, "It's catered; there's finger food and beer."

After leading me through a Byzantine series of halls, stairwells, sub-basements and service elevators at the San Jose Convention Center, J.D. opened a nondescript door, revealing a plush boardroom befogged with cigar smoke. "Oh, by the way, every SD PUNDIT has a color pseudonym. I'm Mr. White, Andrew over there is Mr. Orange and so forth."

"Just like 'Reservoir Dogs,'" I said, getting all excited. "So what am I? Mr. Blue? Mr. Red?"

J.D. shook his head. "Sorry, all we have left are Mauve, Teal and RGB values that lie outside the browser-safe palette."

Despite that disappointment, as soon as I overheard the theme of the intense conversation to my left, I was hooked.

Apparently, Kent Beck had written "Extreme Programming Explained" without approval from SD PUNDIT. The book lays out a code-centric model for software development based on intense unit testing, programming in pairs and two-week release cycles. The book is fewer than 200 pages long, clearly written and doesn't introduce any esoteric new language. Worst of all, "XP" dismisses the need for support from, well, the punditry. It doesn't rely on expensive tools, complex diagrammatic syntax or fluffy abstractions that support monthly columns, training seminars and derivative books. This intolerable situation needed to be rectified.

"Okay, then we're agreed," said Ms. Scarlet. "From now on, we're all going to politely dismiss XP as just one of many Agile Processes, which encompass everything from project management to usability to testing."

But one of the listeners looked troubled. "But I don't know any of these Agile Processes! For the past three years, I've been teaching UML-based architecture-centric development!"

Ms. Scarlet put her arm around his shoulder and soothed him. "Don't worry,

Mr. Yellow. The important thing is that you tell people not to focus on the artifacts at hand, but to focus on the production of working code."

I spoke before I realized I was interrupting. "After 40 years of software engineering experience, the best you come up with is focus on the production of working code? That's like telling a rocket scientist to focus on going up without exploding! Surely the success of XP tells us that we have to reconsider the very—"

I couldn't finish the sentence because J.D. had put a chokehold around my neck and was dragging me away, apologizing profusely to the crowd. "Don't you know when to keep your mouth shut?" he hissed. "Do you know what these people do to troublemakers? Did you see 'Eyes Wide Shut'?"

"They'll ruin my relationship with Nicole Kidman?" I asked.

"Worse!" said J.D. "No log-rolling reviews when your next book comes out! Now look, I have to go over to the Working Group on the Characterization of Peer-To-Peer, but I don't want to hear any more of these embarrassing outbursts of principle and analysis—shape up and act like a tech journalist!"

Chastised, I promised to keep my opinions to myself. J.D. sat me down at the table dedicated to the economy. The table's moderator allowed that the mar-

ket was essentially random. Even though we had a 50-50 chance of guessing wrong, we were assured that once we'd agreed on a party line, we would simply adjust our "time horizons" as conditions warranted. Despite a vocal minority that advocated the benefits of economic gloom for those gathered ("In times of fear, those who claim authority prosper," whispered one fellow from the depths of a hooded cape), I was happy to learn that the stock market's loss of \$4 trillion in valuation over the past year was nothing but a dimple in an exponentially rising curve of fortune.

Buoyed by the news (or, more precisely, the news-to-be), I proceeded to help myself to libations. By the time the evening ended, I had learned about the fortunes of all the various XML standards, Microsoft .NET, Sun ONE and the Bush administration's technology initiatives. I'm not going to ruin any of the surprises, but I am happy to announce that, just as surely as the economic slowdown was only a stumbling on the golden road of wealth, this will be "The Year of Web Services." Or my name isn't Mr. 0xf2, 0x04, 0xcc. ■

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WEB WATCH



LARRY O'BRIEN

TOO MUCH

← continued from page 39

best serve all constituents. XML DevCon and Software Development 2001 probably both suffered being held the same week. SD 2001 in San Jose was held the same week as the Embedded Systems Conference in San Francisco, and they are owned by the same company!

In the Java market there is one main event, JavaOne, which is the one place and time that everyone who's anyone in Java will be present. Likewise, the Embedded Systems Conference made a successful move from San Jose to San Francisco's Moscone Center this year and has done a splendid job of remaining unchallenged as the premier annual event for embedded developers and managers.

The XML market is having no such luck. The Santa Clara, Calif., edition of Camelot Communications' XML DevCon show, which seemed to have the best shot of becoming the industry's main fall event, now has an additional pair of competing shows from Sys-Con Media and Fawcette Technical Publications, both held two weeks before XML DevCon. In fact, there are already 10 major commercial XML conferences, not to mention "boot camps" and seminars.

Exhibitors and speakers will not grace every event, splintering them all. When you consolidate events, the best

speakers and instructors don't have to flip a coin and decide where to appear. When you have gathered all of the best speakers and teachers in one place, you will have very strong attendance. That, in turn, will bring in the exhibitors, and all of a sudden you have an industry event.

No one wins from this glut of copycat events in the XML market, including the producers themselves.

As it is now, you will have three poor options: First, try to pick and choose the highest-quality technical program to send a team to; second, boycott all of the West Coast events and go to XML DevCon's New York City event each spring; or third, spend a lot more time in airport departure lounges.

We would urge the conference producers to look at their schedules. By all means, offer us leading-edge educational events. But by stomping on the dates and locations of existing conferences, and by knowingly scheduling your conference to force the pool of attendees to split their participation, you will shrink, not grow, the market for all events, as no event will ever gain critical mass.

The calendar has 52 weeks in it, and there are more conference locations than just New York and the San Francisco Bay Area. Your instructors are always teaching attendees about new ways to solve problems. Event producers should practice what they preach. ■

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WITH .NET POWER COMES .NET RESPONSIBILITY

Microsoft is going to great lengths to build a holistic philosophy into its .NET servers, specifically between its development and deployment tools. On the one hand, this is potentially a big step forward in reliable application design; but on the other, it's going to require one elusive quality that most developers and development teams just aren't all that good at: communication.

One specific example here could be Application Center 2000. During my first write-up of AC2K ("AC2K Should Have Been There Already," July 1, 2000, page 23), I automatically pigeonholed it as a network management tool, which it is—but only partially. AC2K's initial claim to fame was that you couldn't build Windows 2000 server clusters without it. You still can't, but that's really not all there is to App Center. Actually, it does what its name implies, namely act as the central management console for all your applications.

Where communication comes into play is that now developers and network managers have even more to talk about than before. AC2K has a number of advanced tools for deploying and synchronizing Web applications across large numbers of servers, but along with these new capabilities come new caveats for both

developers and IT hardware experts.

For one, Microsoft makes a big deal of AC2K's ability to manage COM+-based applications, which might make the unwary think it could do the same for COM-based applications. Not so. With zero native support for ordinary COM apps, your developers will need to convert COM apps to COM+ before running them under AC2K. Even once that's done, developers will need to describe the applications' COM+ components to the Web cluster management staff because AC2K replicates COM+ objects differently than it does normal Web-based applications based on HTML or Active Server Pages. Where AC2K can replicate HTML and ASP across multiple servers automatically, COM+ objects can be synched up only in an on-demand fashion, and in such cases often require restarting a service or even an entire server. That means staff intervention or custom scripting for the IT guys.

Another possible gotcha are ISAPI files. Either during initial deployment or during subsequent updates, ISAPI files often require an IIS restart, which can sometimes be triggered automatically upon replication. Nothing freaks out

network managers more than a sudden Web server restart, so once again developers need to warn their IT cohorts of this eventuality.

Developers aren't the only ones that need to do some more talking. Network managers can't employ an Application Center 2000 management strategy in a vacuum. While it is a powerful, possibly even a required, add-on to a Windows 2000 Web server farm, AC2K has limitations of its own, and it's not fair to assume that the development staff will glean these from the air. Of course, network managers should be involved in the design of applications in any case, but more so when advanced tools like AC2K are involved.

An example here might be a Web-based but distributed application design. Imagine an application meant to run across a WAN rather than a LAN infrastructure. In this case, AC2K may sound like the obvious way to go because of its advanced management and especially its clustering capabilities. And for those features, it certainly would be an asset. But you don't want to use it as a deployment tool because its replication engine was designed to move data in large, secure chunks—something ill-suited to skinny WAN pipes. Microsoft has pointed out as much and even supplied deployment alternatives (such as its Con-

tent Deployment System, for one) but developers should be aware of these methods during design to avoid last-minute migraines or delays.

Load balancing is another major feature set within AC2K. When network managers think of load balancing, they think of what AC2K refers to as Network Load Balancing (NLB), which works by allowing individual cluster members to see individual IP packets. But AC2K can also manage load balancing on a component level (CLB). This works by allowing managers to assign performance weights to specific performance criteria or member classes. You guessed it: Getting CLB to work properly can take a whole bottle of Advil, but the results can be worth the effort provided your application designers had this feature in mind when the app was being built.

As Microsoft reveals more of its .NET product generation, I'll admit I'm becoming ever more impressed. But I'm also realizing that this isn't your father's Windows NT. There is a maze of minefields awaiting those too good to crack the manual. Do yourself a favor and plan any .NET implementation as carefully as you can. The app you save will be your own. ■

Oliver Rist is vice president of product development for rCASH in the REALM. Reach him at orist@mindspring.com.

WINDOWS WATCH



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SOFTWARE

SD 2001 Shows New, Updated Products

Development environments, modeling tools, code debuggers share expo floor

BY ALAN ZEICHICK
AND DOUGLAS FINLAY

SAN JOSE, CALIF. — Many software vendors used the Software Development 2001 Conference and Expo to launch such products as a UML collaboration tool and a prototype program that creates Web applications for launch from the desktop rather than from a browser.

Among the releases was CanyonBlue Inc.'s Cittera Unified Modeling Language tool, which provides a Web-based real-time collaborative environment for software architects. "Few enterprises actually have a UML tool because there are not many good architects available for building good products," said N. Venu Gopal, CanyonBlue's founder and chairman.

He said Cittera (www.canyonblue.com/AsterixHtml/cittera.htm) would enable top-grade architects to share ideas with other enterprise architects to extend the value of the high-level architect across the enterprise. He said Cittera could be used within multiple development centers in banks and manufacturing, which are scattered around the world, to enable design modeling to take place.

In addition, he said, Cittera features both real-time and non-real-time collaboration, and has read/write and read/review features, as well as the ability to allow features of one design to be dropped into another. It supports Java and C++, as well as the UML 1.3 feature set and XML.

To be launched on June 1, Cittera will cost \$250 per developer license, and is also available on a subscription basis.

Currently in prototype form, IBM Corp.'s new Sash Weblications 2.0 is a development environment for building Web-based applications that can run directly on the Windows desktop, rather than within a Web browser. Dan Powers, IBM's director of early Internet technology, said Sash applications, which IBM calls Weblications, are written in JScript and HTML.

He said that Weblications would be launched like a tradi-

tional Windows desktop application, but would be able to use HTTP, SOAP and XML to bypass the Web server to connect directly to a data source to retrieve information.

According to Powers, Sash (<http://sash.alphaworks.ibm.com>) supports traditional Windows APIs, as well as other Windows features such as the registry, and that finished Weblications cache data locally.

InCert Software Corp. demonstrated a new Developer and Test Edition of its TraceBack source-code tracing debugger. The current TraceBack for Windows is used to wrap applications before they are deployed to customers or end users; the wrapper monitors memory usage and application behavior, and in the event of a crash will send information back to the developers and QA department so that the crash can be analyzed and the bugs repaired.

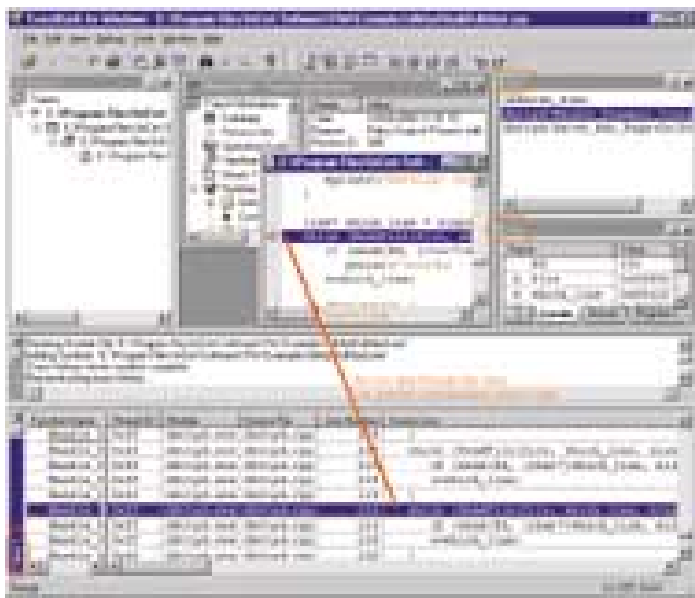
The future edition, whose price and availability have not yet been announced, will be

"And with all the debuggers out there today, there are still plenty of bugs," he said.

Look out Godzilla, here comes Komodo. Or should that be look out, Mozilla? ActiveState Corp. has released Komodo 1.0, which it claims is the first Mozilla application released by a third party—that is, other than by Netscape Communications Corp. Mozilla is the foundation code for the Netscape Web browser, released several years ago as open source through Mozilla.org.

ActiveState's new Komodo is a cross-platform, multilanguage integrated development environment (IDE) for Perl and Python that is heavily based on the Mozilla code base.

According to the company (www.activestate.com), Komodo includes a regular expression toolkit, integrated online help and a language-aware code editor, and offers interactive remote debugging. In keeping with its open-source heritage, the Komodo code is itself visible and extensible,



InCert's TraceBack source-code debugger now comes in a Developer and Test Edition to test programs before installing.

specifically tuned and packaged for developers to use as part of the test/QA process, prior to application deployment.

"Bugs that escape even the lab environment are out in production, and they are the most expensive to fix," said Jeff Mulligan, the company's (www.incert.com) vice president of marketing. He said it costs the enterprise even more to use its own developers to fix the bugs.

says ActiveState. However, the Komodo IDE is completely free only for educational use; all other use requires a \$295 subscription to the company's ActiveState Programmers Network (ASP) Komodo support program, which includes a one-year license to use Komodo.

Komodo 1.0 is currently shipping only for Windows clients, but the company says



OPL Studio 3.5 schedules tasks to build optimization into applications.

that a prerelease Linux version is also available.

Although Web-based Java applications are good for many things, high-level mathematical problem solving isn't one of them, according to Ilog S.A., which is now offering a solution in its OPL Studio 3.5 development kit.

Geared toward the types of problems that require advanced goal-seeking or constraint-based algorithms, the newest release is the first to link OPL Studio's Optimization Programming Language to the Java 2 platform, says the company (www.ilog.com). It also offers direct links to application servers and Web servers, and has APIs for extending its functionality with C++. Shipping now for HP-UX, Linux, Solaris and Windows, OPL Studio is \$10,000 per development license.

Meanwhile NQL Inc. introduced its ContentAnywhere Server for Microsoft Office XP, geared for "100 users or less that need to pull content from a variety of data sources," said David Pallman, NQL's (www.nqli.com) CTO. He described the server as a content-management platform that turns both internal and external data into XML for dissemination to applications.

By using ContentAnywhere to create SOAP connections to a number of data sources, he said, Office XP users could bring data into the server to be transformed into XML. Once transformed, other applications could then access the data via SOAP.

Available now, the Office XP version of the ContentAnywhere server is priced at \$15,000 for up to 100 users, with additional charges for features for document management and support for wireless applications.

At the show, the company also lowered the price of its Network Query Language scripting language license and development tools. The entry-level Standard Edition is priced at \$495 per developer seat. The Professional Edition, priced at \$1,500, adds the ability to run NQL scripts as Web applications, as well as support for mobile devices and neural networks. The \$10,000 Enterprise Edition is essentially a site-licensed version of the Professional Edition.

A minor upgrade is now available for TechExcel Inc.'s DevTrack bug-tracking tool. The new version, 4.1, according to the company (www.techexcel.com), includes new workflow and communications features specifically geared for complex requirements.

Available immediately as a downloadable no-cost upgrade for DevTrack 4.x users, the new version includes full-field-searching and reporting capabilities for all user-defined fields and custom pages, says the company, as well as support for Informix database servers. A new feature is DevTrack's ability to use Windows NT/2000's user authentication database, removing the need for developers to use a separate login authentication process when using DevTrack. ■



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A BILLION POINTS OF LIGHT

It took a billion-dollar stroke of its Big Blue pen for IBM to finally put Informix to rest. That shows just how difficult it is, even in this economic climate, to make a database company go away. They live on even after their businesses dry up, receiving life support from license renewals to obsolescent software paid by their loyal followers, year after year. It's how Bob Denver continued to earn a living after being kicked off his desert island. (The password is...residuals). A company might put a new front end on its IT system, or adapt a new piece of middleware, but it would take an occurrence of apocalyptic proportions to arrive at the decision to trash the DBMS and start over on a new system.

But make no mistake, Informix will go away. IBM says it will continue to have the Informix engineers working to update the product line "as long as customers want it." But you know a nice migration path to DB2 will be quickly forged; IBM is not a VAR, after all. It bought Informix for its installed base of 100,000 customers, and most of all to get a crack at the DNA underlying the technology. "This won't be a similar thing to Lotus," said Bruce Scott, CEO of embedded database vendor Point-Base. There will be no, ahem, sequel to this story.

Back in October, in this very space, I said that the effect of the decision by Informix to separate its stagnating database business from a growing information asset management arm would not be known for about a year. Well, it's been only six months, and it looks as if the moves made by CEO Peter Gyenes are nothing short of brilliant. At the very least, it can be said he

listened to stock market analysts—a creditable feat in and of itself—who said they felt the only way Informix would return to a position of growth would be to cut loose its legacy database products. So Gyenes, after consolidating five diverse businesses into the two divisions, went out and found himself a billion-dollar return for his efforts. ("I wonder if they could have

MONEY WATCH



DAVID RUBINSTEIN

gotten more," said Aberdeen Group analyst Wayne Kernochan. "Twenty percent above revenue is not a bad deal for IBM.") To sweeten the deal, Ascential Software—the name of the other Informix division and the name the holding corporation will take upon completion of the sale to IBM—has entered into lucrative agreements with IBM to port its high-end, multimedia asset management tool to AIX. The two companies will continue to be deeply intertwined.

When asked if IBM's move could be likened to a carmaker's getting a look under a competitor's hood, Scott said, "It's more akin to a chop shop." IBM, he believes, will tear up the Informix products and roll the best pieces into the existing IBM product line. That viewpoint helps make some sense of the acquisition, which had many in the industry scratching their heads upon hearing the news. IBM was already well established in the Unix database market and was running just about neck-and-neck with Oracle in the overall market—IBM dominates the mainframe; Oracle had the lion's share of Unix and Windows installations.

Where the deal makes the most sense, and where the most potential for growth lies, is in the embedded space. Although IBM already has DB2 Every-

place, it was Cloudscape and Cloudsync mobile database products from Informix that really piqued IBM's interest. "We want to look inside and see how we can improve DB2 Everywhere," said Jeff Jones, IBM senior program manager for data management solutions.

Aberdeen Group's Kernochan also cited two added enticements: a very strong indirect sales channel, especially in Europe, and the fact that Informix's high-end business was not forced out, again mostly in Europe, when everyone started buying Oracle database solutions. "If IBM can align its marketing with Informix's cache, they could become the Unix market leader," he said.

Of course, Oracle will not cede its market position so quickly. The very day IBM made the acquisition announcement, Oracle issued a news release announcing "the SafeSwitch Program for Informix," which was described as a data and application migration program for Informix customers "searching for performance, scalability and database innovation not available with IBM DB2."

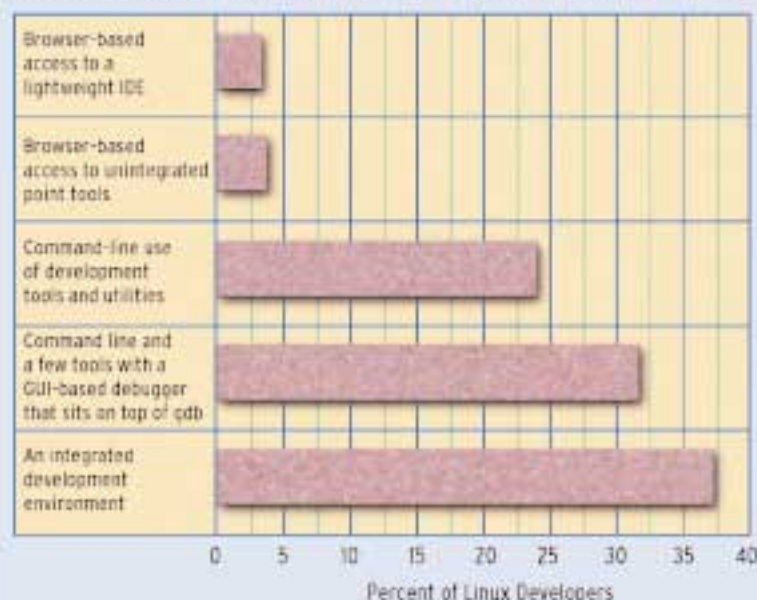
"Larry [Ellison, CEO of Oracle] relishes a fight," said Scott, who worked at Oracle when it was still a consulting company in the 1970s. "They'll be up for the challenge."

Apparently, Sun and BEA—two companies that lack a database underneath their middleware—were not. "Do Sun or BEA have the stomach to get into a high-velocity database race?" asked Jones. "It's a two-horse race." Well, not exactly. Microsoft is in the game and so is Sybase, albeit its attention also seems to have turned toward embedded systems.

Meanwhile, one of the oldest database thoroughbreds is being put out to pasture. ■

David Rubinstein is executive editor of SD Times.

Linux Developers: Command Line or IDE?



Despite the increased popularity of end-user graphical shells for Linux, at its heart the operating system is still dominated by the command line. That's nowhere more apparent than when it comes to developers' Linux desktop systems. Only one-third (37 percent) of Linux developers surveyed said they used a graphical integrated development environment; more than half (55.7 percent) said that they either used only command-line based tools or such tools in conjunction with a graphical interface for gdb, which is the popular GNU debugger for C++. However, the preference for graphics IDEs has grown by 15 percentage points since the previous survey in September 2000, showing that more modern development tools are making headway in the Linux market.

Source: Linux Developer Survey, Vol. 2, 2001
Evans Data Corp.
www.evansdata.com

CALENDAR OF EVENTS

Apple Worldwide Developers Conference

May 21-25

San Jose Convention Center, Calif.
APPLE COMPUTER INC.

<http://developer.apple.com/wwdc2001>

Spring Presence and Instant Messaging

May 22-24

Hyatt Harborside, Boston
PULVER.COM

www.pulver.com/pim

Enterprise Web & Portal Conference & Expo

May 23-24

Boston Park Plaza
INTERMEDIA GROUP INC.

www.intmedgrp.com/eweb

Software Quality Week

May 29-June 1

San Francisco Marriott
SOFTWARE RESEARCH INC.

www.soft.com/QualWeek/QW2001

Wireless One Conference & Expo

May 29-June 1

New York Hilton
INTERMEDIA GROUP

www.imgevents.com/wireless

Strategic IT Staffing Conference & Expo

May 30-31

New York Hilton
INTERMEDIA GROUP INC.

www.intmedgrp.com/sitss/sitss01ny/overview.html

Convergence University

May 30-June 1

Mission College, Santa Clara, Calif.
CONVERGENCE PROMOTIONS

www.convergenceu.com

Real-Time 2001 Workshop

June 4-7

Hilton Washington Dulles Airport, Herndon, Va.
OBJECT MANAGEMENT GROUP

www.omg.org

JavaOne

June 4-8

Moscone Convention Center
San Francisco
SUN MICROSYSTEMS INC.

<http://servlet.java.sun.com/javaone>

UML World

June 11-14

Crowne Plaza Hotel, New York
CMP MEDIA INC.

www.umlworld.com

eBusiness Conference and Expo

June 12-14

San Jose Convention Center, Calif.
CMP MEDIA INC.

www.kingbird.com/ebusiness

VBITS 2001 (VSLive)

June 20-23

New York Marriott Marquis
FAWCETTE TECHNICAL PUBLICATIONS

www.vbits.net/2001/ny

Wireless One

June 25-28

Mandalay Bay Resort & Casino
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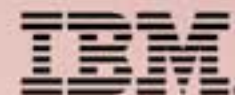
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